

7-30-02

SEQ./03CD



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Boot et al.

Serial No.: 10/046,671

Filed: January 14, 2002

For: MOSAIC INFECTIOUS BURSAL
DISEASE VIRUS VACCINES

Confirmation No.: 9315

Examiner: To be assigned

Group Art Unit: 1642

Attorney Docket No.: 2183-5238US

NOTICE OF EXPRESS MAILING

Express Mail Mailing Label Number: EL608689640US

Date of Deposit with USPS: July 25, 2002

Person making Deposit: Jon Wentz

TRANSMITTAL OF FORMAL DRAWINGS

Commissioner for Patents
Washington, D.C. 20231

Sir:

Attached please find the formal drawings for this application.

Respectfully submitted,

Tawni L. Wilhelm
Registration No. 47,456
Attorney for Applicant(s)
TRASKBRITT
P.O. Box 2550
Salt Lake City, Utah 84110-2550
Telephone: 801-532-1922

Date: July 25, 2002
ACT/bv



435/2351
mug 10/27

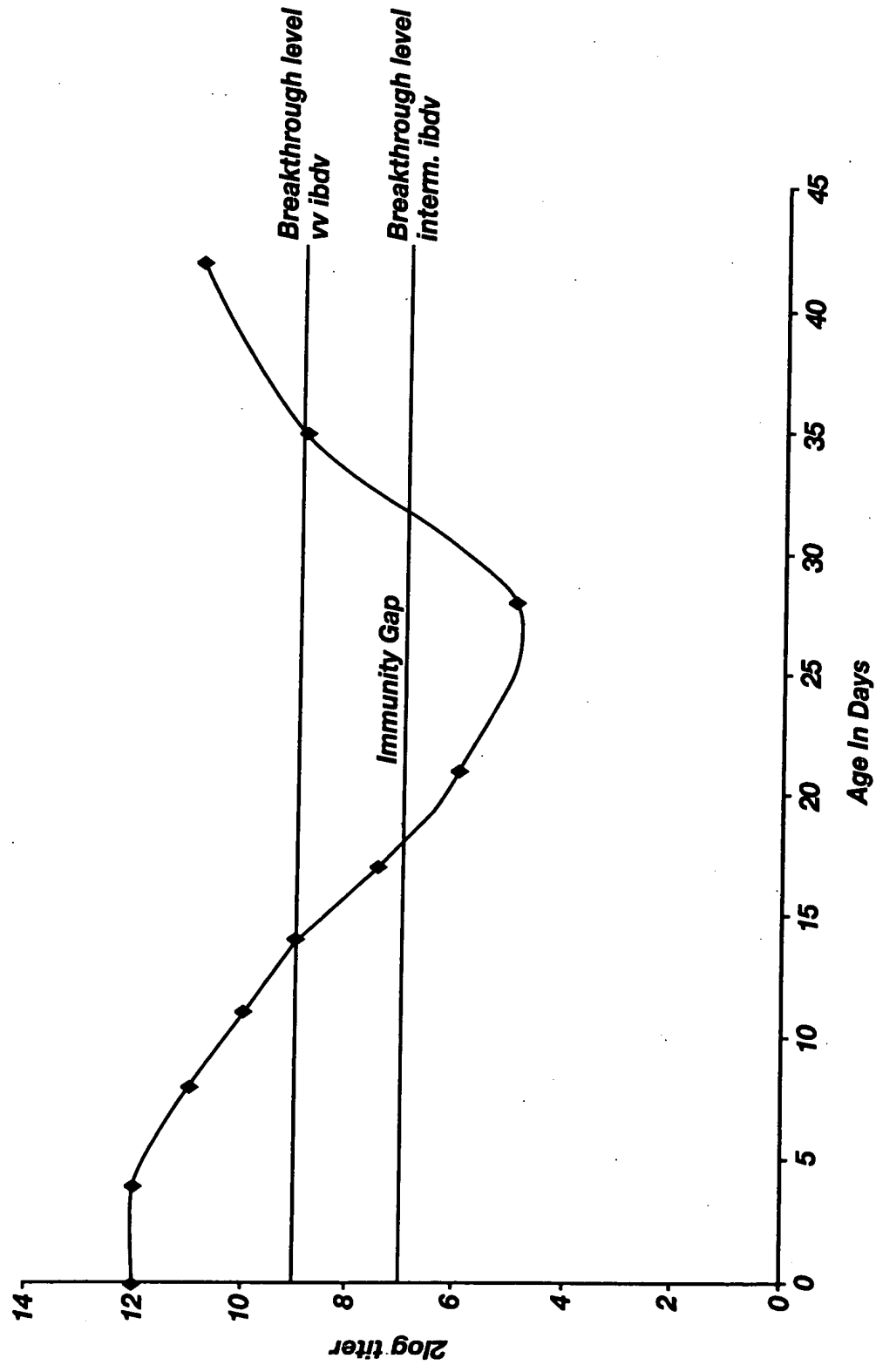


FIG. 1

[illegible]



FIG. 2A (Contd.)

CONSENSUS:	cacaagcctc	agcrttyggg	gagarctcgt	gtttcaaaaca	agcgcccamg	gccttrtact	900
CEF94-A:	.....	...g.t...	....g....	.....	.....C.	....g....	900
D6948-A:	.....	...a.C...	....a....	.....	.....a.	....a....	900
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	gggygcyacc	atctacctya	taggctttga	tgggacwgcg	gtaatcacca	grgctgtggc	960
CEF94-A:	...C.C...	.....C.	.....	.....a...	.....	...g.....	960
D6948-A:	...t.t...	.....t.	.....	.....t...	.....	...a.....	960
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	cgcaracaat	gggctracgr	cgggcacyga	caacctttwtg	ccattcaatm	ttgtgattcc	1020
CEF94-A:	...a.....	....g...a	.....C..	.....t..	.....a	.....	1020
D6948-A:	...g.....	....a...g	.....t..	.....a..	.....C	.....	1020
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	aacmarcgag	ataaccacgc	caatcacatc	catcaaaactg	gagatagtga	cctccaaaag	1080
CEF94-A:	...a.a...	.....	.....	.....	.....	.....	1080
D6948-A:	...C.g...	.....	.....	.....	.....	.....	1080
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	tggtggtcag	gcrggggac	agatgtcrtg	gtcrgcaagw	gggagcctag	cagtgacgat	1140
CEF94-A:	.....	...a.....	.....g..	...g....a	.....	.....	1140
D6948-A:	.....	...g.....	.....a..	...a....t	.....	.....	1140
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	ccaygggtggc	aactatccag	gggccctccg	tcccgtcacr	ctagtrgcct	acgaaagagt	1200
CEF94-A:	...t.....	.....	.....	.....g	....g....	.....	1200
D6948-A:	...C.....	.....	.....	....a	....a....	.....	1200
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	ggcaacagga	tcygtcggtta	cggtcgcygg	ggtgagcaac	ttcgagctga	tcccaaatcc	1260
CEF94-A:	.....	...C.....	.....t..	.....	.....	.....	1260
D6948-A:	.....	...t.....	.....C..	.....	.....	.....	1260
TY89-A:	-----	-----	-----	-----	-----	-----	



CONSENSUS:	tgaactagca	aagaacctgg	tyacagaata	cggccgattt	gaccacaggag	ccatgaacta	1320
CEF94-A:	.....	.....	.t.....	.....	.....	.....	1320
D6948-A:	.....	.....	.C.....	.....	.....	.....	1320
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	cacaaaattg	atactgagt	agagggaccg	tcttggcatac	aagaccgtmt	ggccaacaag	1380
CEF94-A:	.....	.....	.....	.....	.....C.	.....	1380
D6948-A:	.....	.....	.....	.....	.....a.	.....	1380
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	ggagtacact	gactttcggy	artacttcat	ggaggtggcc	gacctcaact	ctccccctgaa	1440
CEF94-A:	.....	.....t.	.a.....	.....	.....	.....	1440
D6948-A:	.....	.....C.	.g.....	.....	.....	.....	1440
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	gattgcagga	gcattyggct	tcaaagacat	aatccggggcc	mtaaggagga	tagctgtgcc	1500
CEF94-A:	.....	.....C....	.....	.....	a.....	.....	1500
D6948-A:	.....	.....t....	.....	.....	C.....	.....	1500
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	ggtggtctcy	acaytgttcc	caccyggccg	tcccctagcc	catgcaattg	gggaagggtgt	1560
CEF94-A:	.....C...t.....	.....t.....	.....t.....	.....	.....	.....	1560
D6948-A:	.....t...C.....	.....C.....	.....C.....	.....	.....	.....	1560
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	agactacctg	ctggggcgatg	aggcacaggc	tgcttcagga	actgctcgag	ccgcgtcagg	1620
CEF94-A:	.....	.....	.....	.....	.....	.....	1620
D6948-A:	.....	.....	.....	.....	.....	.....	1620
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	aaaagcaaga	gctgcctcag	gccgcataag	gcagctract	ctcgccgccg	acaaggggta	1680
CEF94-A:	.....	.....	.....g..	.....	.....	.....	1680
D6948-A:	.....	.....	.....a..	.....	.....	.....	1680
TY89-A:	-----	-----	-----	-----	-----	-----	

FIG. 2A (Contd.)

CONSENSUS:	agcttacatg	gatgtgttc	gacccaaagt	ccmatccat	gtggcyatga	cgggagccct	2160
CEF94-A:	.....	.....	.....	..a.....	.....t...	.....	2160
D6948-A:	.....	.....	.....	..C.....	.....C...	.....	2160
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	caaygcytrt	ggcgagattg	agaamgtrag	ctttagaagc	accaagctcg	ccactgcaca	2220
CEF94-A:	..t..t.g.	.....	..a.a..	.....	.....	.....	2220
D6948-A:	..C.C.a.	.....	..C.g..	.....	.....	.....	2220
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	ccgacttggc	ctyaagtgg	ctggtcccg	wgcattygay	gtraaacacg	ggyccaactg	2280
CEF94-A:	.....	..t.....	.....	..a.....C..t	..a.....	..C.....	2280
D6948-A:	.....	..C.....	.....	..t.....t..C	..g.....	..t.....	2280
TY89-A:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	ggcracgtty	atcaaacgtt	tycctcaaa	tccmcgmga	tgggacaggy	tmccytacct	2340
CEF94-A:	..a.....C	.....	..C.....	..a..C...	.....C	..C.....	2340
D6948-A:	..g.....t	.....	..t.....	..a..C...	.....C	..C.....	2340
TY89-A:	-----	-----	..C.....	..C.a...	.....t	..a..C.....	44
CONSENSUS:	caacctwccm	tayctyccac	cmamgwcgg	acgycagtwc	sayctkgccm	tgghgchtc	2400
CEF94-A:	.....a..a	..C..t...	..C.at..a..	..C.....a.	..C..t...a	.....t..a..	2400
D6948-A:	.....t..a	..C..t...	..C.at..a..	..C.....a.	..g..C..g...a	.....C..t..	2400
TY89-A:	.....t..C	..t..C....	..a.ca..t..	..t.....t.	..C..t..g...c	.....a..c..	104
CONSENSUS:	mgagttcaaa	gagaccccmg	aactcgarr	ygcygtsmgw	gcmatggamg	cwgcgwgcmaa	2460
CEF94-A:	a.....	.....C.	.....gag	..C..Ca.a	..a.....a.	..a..a..C..	2460
D6948-A:	a.....	.....C.	.....gag	..C..Ca.a	..C.....a.	..a..a..C..	2460
TY89-A:	C.....	.....a.	.....aga	..C..t..gc.t	..a.....C.	..t..t..a..	164
CONSENSUS:	cgtsgaccca	ytrttccrmt	cwgcdctcmr	bgtsttcacg	tggytggaag	araaygggat	2520
CEF94-A:	..g.....	..C.a.....aa.	..t..a...ag	..t..g.....	..C.....	..g..t.....	2520
D6948-A:	..g.....	..C.g.....aa.	..t..g...ag	..C.g.....	..C.....	..g..t.....	2520
TY89-A:	..C.....	..t.g.....gc.	..a..t...ca	..g..C.....	..t.....	..a..C.....	224





FIG. 2A (Contd.)

CONSENSUS: tgtracygay atggcyaaact tcgcmctcag cgaccccaac gcmcaymgga tgmmaattt 2580
CEF94-A: ...g..t..c ...C... ..a..... ..C..tc... ..Cga..... 2580
D6948-A: ...g..t..t ...C... ..a..... ..C..tc... ..Cgc..... 2580
TY89-A: ...a..C..c ...t... ..C..... ..a..ca... ..aaa..... 284

CONSENSUS: ycthgcaaay gcwccmcarg cmggmagcaa gtcgcaragr gccaaagtayg gsacrgcwgg 2640
CEF94-A: t..t.....C ..a..a..a. a..C... ..a..a..gC. .g..a..a.. 2640
D6948-A: t..C.....C ..a..a..a. a..C... ..a..a..aC. .g..a..a.. 2640
TY89-A: c..a.....t ..t..c..g. .C..a..... ..g..gt. .C..g..t.. 344

CONSENSUS: ctacggagtg gaggcymgrg gcccccacdcc agargargca cagagggara aagacacacg 2700
CEF94-A:t..c..g.a.. ..g..a..a. 2700
D6948-A:cc..g.t.. ..g..a..a. 2700
TY89-A:ta..a.g.. ..a..g..g. 404

CONSENSUS: gatctcmaag aagatggara cbatgggcat ctacttygca acaccrgaat gggtagcact 2760
CEF94-A:a... ..g.....g. .C..... ..t... ..a... 2760
D6948-A:a... ..g.....g. .t..... ..t... ..a... 2760
TY89-A:C... ..a.....a. .g..... ..C...g. 464

CONSENSUS: caaygggcac cgrggsccaa gccccggcca gctvaagtac tggcaraaca camgagaaat 2820
CEF94-A: ...t..... ..a..g....a..... ..g.... ..C..... 2820
D6948-A: ...t..... ..g..g....g..... ..g.... ..C..... 2820
TY89-A: ...C..... ..a..C....C..... ..a..... ..a..... 524

CONSENSUS: accdgahecm aacgaggact aycyagacta ygtgcaygcr gagaagagcc ggttggrtc 2880
CEF94-A: ...g..C..at..... ..C..... ..t..aa... 2880
D6948-A: ...t..t..aC..... ..C..... ..t..aa... 2880
TY89-A: ...a..a..cC..... ..t..... ..C..gg... 584

CONSENSUS: agaagaacar rtcytaaggg cagcyacgtc gatctacggg gctccaggac aggcwgarcc 2940
CEF94-A:a a..C..... ..t..... ..t.....a..g.. 2940
D6948-A:a a..C..... ..t..... ..t.....a..g.. 2940
TY89-A:g g..t..... ..C.....t.....t..a.. 644



FIG. 2A (Contd.)

CONSENSUS: accccaagcy ttcatagacg aagtygccar rgtctatgaa atcaaccatg grcgtggycc 3000
CEF94-A:tt....a aaac.. 3000
D6948-A:cc....a aagc.. 3000
TY89-A:cc....g gggt.. 704

CONSENSUS: maaccargar cagatgaarg ayctgctcyt gactgcatg gagatgaagc atcgcaatcc 3060
CEF94-A: a.....a..aa. .t.....t. 3060
D6948-A: C.....a..aa. .t.....C. 3060
TY89-A: a.....g..gg. .C.....C. 764

CONSENSUS: caggcgggct cyaccaaaagc cmaagccaaa acccaatgct ccawcacaga gacccctgg 3120
CEF94-A:t..... .C..... .C..... .a..... 3120
D6948-A:C..... .C..... .C..... .a..... 3120
TY89-A:C..... .C..... .a..... .t..... 824

CONSENSUS: wcggctgggc cgctggatca ggrcbgtctc tgaygaggac ytkgagtga gycctggga 3180
CEF94-A: t..... .C..... .a.C..... .t..... .C.t..... .ta..... 3180
D6948-A: t..... .C..... .g.t..... .t..... .C.t..... .ct..... 3180
TY89-A: a..... .C..... .a.g..... .C..... .t.g..... .ct..... 884

CONSENSUS: gtctcccgac accaccgcg caggygtgga caccaattmr kmhhtaswrm atycsaaatt 3240
CEF94-A:C..... .t..... .Cg gact..caac ..C.C..... 3240
D6948-A:C..... .C..... .cg gccac..caac ..C.C..... 3240
TY89-A:C..... .t..... .aa tcac..gtga ..t.g..... 944

CONSENSUS: ggatccgttc gcgggtcccc 3260
CEF94-A: 3260
D6948-A: 3260
TY89-A: 964

FIG. 2B

CONSENSUS: ggatacgatg ggtctgaccc tctgggagtc acgaattaac gtggctacta ggggygatrm 60
CEF94-B:C...aa 60
D6948-B:t...gc 60

CONSENSUS: ccrccgctrg ctgccacggtt agtggtcctt cttcttgatg attctreccac catgagtgc 120
CEF94-B: ..g....g.g.... 120
D6948-B: ..a....a.a.... 120

CONSENSUS: rttttcaaya gtccacaggc gcgaagcamg atmtcagcag cgttcggcat aaagcctacw 180
CEF94-B: a.....C.C....t 180
D6948-B: g.....t.a....a 180

CONSENSUS: gctggacarg aytggaaga actcytgatc cctaargtyt gggtgccacc tgaggatccs 240
CEF94-B:a. .C.....t....a..t.g 240
D6948-B:g. .t.....C.....g..C.C 240

CONSENSUS: ytkgccagcc ctagtgcwct ggcmaagtct ctcagrgara acggctacaa rrttytgacg 300
CEF94-B: C.t.....a.. ..a.....a..g.ag..t.... 300
D6948-B: t.g.....t.. ..C.....g..a.ga..C.... 300

CONSENSUS: ccacggtctc trccygagaa tgaggagtat gagaccgayc aaatactccc wgacytagcw 360
CEF94-B:g..C..... ..C.....a...t....a 360
D6948-B:a..t..... ..t.....t....C....t 360

CONSENSUS: tggatgmgrc agatagargg rgctgtttta aaaccmacyc tatctctccc yattggagay 420
CEF94-B:C.a.a..g.....C..t.t.....t 420
D6948-B:a.g.g..a.....a..C.C.....C 420

CONSENSUS: caggagtact tcccwaarta ctaccaaca caycgcccka gcaaggaraa gcccaatgcg 480
CEF94-B:a..g.. ..a.....t....t.g.... 480
D6948-B:t..a.. ..C.....g.a.... 480

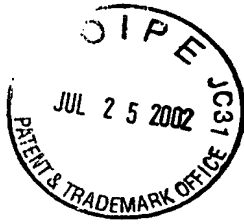


FIG. 2B (Contd.)

CONSENSUS: taccgccmg ayatgcayt actcaagcag atgatyacy tgtttctcca ggttccmgag 540
CEF94-B:a. .C.....C.t...Ca... 540
D6948-B:C. .t.....t.C...tC... 540

CONSENSUS: gccammgakr rcctwaarga tgargtmacc ctmytracc aaaacatwag rgayaargcc 600
CEF94-B:ac..gg g...a.g.. ...a.a... .ct.g...a.. g..C..g... 600
D6948-B:ca..ta a...t.a.. ...g..C... .ac.a...t.. a..t..a... 600

CONSENSUS: taygggragt ggcactacat gggacargcm acymgacttg tkgcyatgaa rgaggtygcc 660
CEF94-B: ..t..a....a..a .tc..... .g..C.... g.....C... 660
D6948-B: ..C..g....g..C .ca..... .t..t.... a.....t... 660

CONSENSUS: actggragaa acccaaaciaa rgatcctcta aagcttggtg acacytttga gagcatmgcs 720
CEF94-B:a....g.....t....C..g 720
D6948-B:g....a.....C....a..c 720

CONSENSUS: cagctacttg acatcacwyt accggtaggc ccaccgggtg aggatgacaa gccctgggtr 780
CEF94-B:ac.g 780
D6948-B:tt.a 780

CONSENSUS: ccactcaciaa grgtgccggtc amggatgttg gtwtgacgg gmgacgtaga tggsgamttt 840
CEF94-B:a..... .C..... .a..... .a.....C... 840
D6948-B:g..... .a..... .t..... .C..... .g..a... 840

CONSENSUS: gaggttgarg aytaccttcc caaaatcaac ctcaagtcac caagtgagact rccmtatgtw 900
CEF94-B:a. .t.....a..a.....a 900
D6948-B:g. .C.....g..C.....t 900

CONSENSUS: ggtcgcacca aaggagarac wattggsgag atgatagcya tmtcraacca gtttctymga 960
CEF94-B:g.. a.....C...t. .C..a..... .ca... 960
D6948-B:a.. t.....g...C. .a..g..... .tc... 960





FIG. 2B (Contd.)

CONSENSUS: gagctatcar crctgytgaa gcarggtgca gggacaaarg ggtcraacaa gaagaagctr 1020
CEF94-B:a .a...t... ..a.....g.a..... 1020
D6948-B:g .g...C.....g.....a.g.....g 1020

CONSENSUS: ctcagcatgy taagtgacta ytggtactta tcatgygggc ttttgtttcc maaggctgar 1080
CEF94-B:tt..... ..C..... ..a.....a 1080
D6948-B:CC..... ..t..... ..c.....g 1080

CONSENSUS: aggtacgaca aaagyacatg gctcaccaag accgkaaca tatggtcagc tccatcmcca 1140
CEF94-B:t..... ..g..... ..C.... 1140
D6948-B:C..... ..t..... ..a.... 1140

CONSENSUS: acacacctca tgatctcwat gatmacctgg cccgtgatgt ccaayagccc aaayaacgtg 1200
CEF94-B:t.. ..C..... ..C..... ..t..... 1200
D6948-B:a.. ..a..... ..t..... ..C..... 1200

CONSENSUS: ttgaacattg argggtgtcc rtcactctac aarttcaacc cgttyagagg wgggytraac 1260
CEF94-B:a.....a..... ..a..... ..C.....a...t.g... 1260
D6948-B:g.....g..... ..g..... ..t.....t...C.a... 1260

CONSENSUS: aggtcgtsg agtggatawt ggcycggaw gaacccaagg cyttwgtata tgckgacaac 1320
CEF94-B:C.t.. ..C.....atc.t..... ..g..... 1320
D6948-B:g.a.. ..t.....tct.a..... ..t..... 1320

CONSENSUS: atatacattg tycactcmaa cacgtggtac tcaattgacc tagagaaggg tgaggcaaac 1380
CEF94-B:C.....a..C..... ..t..... 1380
D6948-B:t.....C..C..... ..t..... 1380

CONSENSUS: tgcackcgyc aacacatgca rgccgcmatg tactacatmc tyaccagagg rtggtcmgay 1440
CEF94-B:t..C.a.....a..... ..C.....a..C 1440
D6948-B:g..t.C..... ..C..t.....a.....C..t 1440

CONSENSUS: aacggygacc cmatgttcaa tcaracatgg gccaccttgg csatgaacat tgccccwgct 1500
CEF94-B:C.... ..a..... ..a..... ..C..... ..t... 1500
D6948-B:t.... ..C..... ..g..... ..g.....a... 1500

FIG. 2B (Contd.)

CONSENSUS: ctatgktgtg actcatcrtg yctgatwatg aacctkcar tyaagacmta tggtaagggc 1560
 CEF94-B:g... C.....a...g..a. .t.....C.. 1560
 D6948-B:t...a.. t.....t...t..g. .C.....a.. 1560

CONSENSUS: agygggaatg cagccacstt catcaacaac cayctyytka gcacsctwgt gctwgaccag 1620
 CEF94-B: ..C..... ..g... ..g... ..C..ct.g.g..a.. ...t..... 1620
 D6948-B: ..t..... ..C... ..t..... ..t..tc.t.C..t.. ...a..... 1620

CONSENSUS: tggaacytga tgarrcarcc yagwccagac agcgargagt tcaartcaat tgargacaag 1680
 CEF94-B:C... ..ga..g.. C..a..... ..g... ..a..... ..g..... 1680
 D6948-B:t... ..ag..a.. t.t..... ..a..... ..g..... ..a..... 1680

CONSENSUS: ctrgggatca acttyaagat tgagaggtcc attgatgaya tyaggggcaa gctsagacag 1740
 CEF94-B: ..a..t... ..t.... ..t..... ..t..... ..t..C..... ..g..... 1740
 D6948-B: ..g..C... ..C.... ..t..... ..t..... ..C..... ..C..... 1740

CONSENSUS: cttgtccycc ttgcacaacc aggttacctg agtggrgggg tygaaccaga rcaayccagc 1800
 CEF94-B:t..t...t..... ..g... ..t..... ..a...t..... 1800
 D6948-B:C..t...t..... ..a..... ..C..... ..g...C..... 1800

CONSENSUS: ccaactgtwg agctkgacct actmggrtgg tcwgcwacwt acagcaaaga tctyggggtc 1860
 CEF94-B:t..t..... ..a..g... ..a..t..a.t..... ..C..... 1860
 D6948-B:a..g..... ..C..a... ..t..a..t.t..... ..t..... 1860

CONSENSUS: tatgtgccgg tgcttgacaa ggaacgcyta ttttgytctg ctgcgtatcc caarggrgta 1920
 CEF94-B:t...t..... ..C... ..t.... ..t..... ..g..a... 1920
 D6948-B:t...t..... ..t.... ..t..... ..C..... ..a..g... 1920

CONSENSUS: gagaayaara gycctaartc caargtyggg atcgagcarg catacaargt wgtcaggtay 1980
 CEF94-B:C..g. .t.....g.. ..a..C... ..t..... ..g.. ..a..... ..t 1980
 D6948-B:t..a. .C.....a.. ..g..t... ..t..... ..a.. ..t..... ..c 1980

CONSENSUS: gaggcgttga ggttggttagg tggttggaac taccactcc tgaacaaagc ytgcaagaay 2040
 CEF94-B:t...t..... ..t..... ..t..... ..C..... ..t 2040
 D6948-B:t...t..... ..t..... ..t..... ..t..... ..t..... ..c 2040



FIG. 2B (Contd.)

CONSENSUS: aaygcargyg cmgctcgcg gcatctggag gccaaggggt tccrcctga ygagttcctm 2100
 CEF94-B: ..c...g.c. .c..... .g..... .a..... c.....a 2100
 D6948-B: ..t...a.t. .a..... .g..... t.....c 2100

 CONSENSUS: gccgagtggg cwgagygtgc mgagttcggw gargcyttcg aaggcttcaa yatcaagctg 2160
 CEF94-B:t...c.... a.....t .g.c....t..... 2160
 D6948-B:a...t.... c.....a .a.t....c..... 2160

 CONSENSUS: acmgtaacay ckgagagcct mgccgaactk aacarrccag taccocccaa rccycctaat 2220
 CEF94-B: ..c.....t .t..... a.....gag....g.c..... 2220
 D6948-B: ..a.....c .g..... c.....tga....a.t..... 2220

 CONSENSUS: gtcaacagac cagtcaaacac yggkggrctm aaggcagtca gcaaygcct caagaccggy 2280
 CEF94-B:t..... .t.g..a..ct..... .c.....t 2280
 D6948-B:t..... c..t..g..at.....c..... 2280

 CONSENSUS: cggtagaygra aygaagccgg actragtgyy ctgctcctyc tagccacmgc mmgmagccgw 2340
 CEF94-B:c..g. .c..... ..g.....tt..... aa.a.....t 2340
 D6948-B:t..a. t..... ..a.....cc..... cc.c.....a 2340

 CONSENSUS: ctrcargayg cagtyaaggc caaggcagar gccgagaaac tccacaagtc yaagccmgay 2400
 CEF94-B: ..g..a..t.t....at..... c.....a..c 2400
 D6948-B: ..a..g..c.c.....gt..... t.....c..t 2400

 CONSENSUS: gaccccgatg cagactgggt ygaamgrtca gaaacyctgt cagacctkct ggagaaagcc 2460
 CEF94-B:t.....c...a... ..t....t...t..... 2460
 D6948-B:t.....t....c....g.....g..... 2460

 CONSENSUS: gacatygcc a gcaaggctgc ycaactcagca ctctgtgaaa caagcgacgc ycttgaagcr 2520
 CEF94-B:c....t.....t.....t.....a 2520
 D6948-B:t....t.....t.....t.....g 2520

 CONSENSUS: gtycagtcra cytcmgtgta cacyccmaag taccagarg tyagaaccc acagaccgcc 2580
 CEF94-B: ..t.....g. t..c..... ..t..c....a..c.....t..... 2580
 D6948-B: ..c.....a. c..a..... ..c..a...g. t.....t..... 2580



FIG. 2B (Contd.)

CONSENSUS: tccaaccccg ttgttgggct ccacctgccc gccaaagarg ccaccggtgt ccaggcmgct 2640
CEF94-B:C... 2640
D6948-B:a... 2640

CONSENSUS: cttctcggag caggracgag cagaccaatg gggatggagg cyccaacacg gtccaagaac 2700
CEF94-B:C... 2700
D6948-B:t... 2700

CONSENSUS: gccgtgaaaa tggccaaamg gcggcaacgc caaaargaga gccgccaaya gccatgatgg 2760
CEF94-B:C... 2760
D6948-B:a... 2760

CONSENSUS: gaaccactca agaagaggac actaayccca gaccccgat ccccgccctt cgcctgcggg 2820
CEF94-B:t... 2820
D6948-B:C... 2820

CONSENSUS: ggcccccc 2827
CEF94-B: 2827
D6948-B: 2827





CONSENSUS:	MTNLQDQTQQ	IVPEIRSLLM	PTTGPASIPD	DTLEKHTLRS	ETSTYNLTVG	DTGSLIVFF	60
CEF94-PP:	.....	.....	.....	.....	.....	.....	60
D6948-PP:	.....	.....	.....	.....	.....	.....	60
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	PGFPGSIVGA	HYTLQNSGNY	KFDQMLLTAQ	NLPASYNYCR	LVSRSLTVRS	STLPGGVYAL	120
CEF94-PP:	.....	.....	.....	.....	.....	.....	120
D6948-PP:	.....	.....	.....	.....	.....	.....	120
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	NGTINAVTFQ	GSLSELTQVS	YNGLMSATAN	INDKIGNVLV	GEGTVLSLP	TSYDLGYVRL	180
CEF94-PP:	.....	.....	.....	.....	.....	.....	180
D6948-PP:	.....	.....	.....	.....	.....	.....	180
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	GDPIPAIGLD	PKMVATCDSS	DRPRVYTITA	ADDYQFSSQY	Q.GGVTTITLF	SANIDAITSL	240
CEF94-PP:	.....	.....	.....	.....	.....P.....	.....	240
D6948-PP:	.....	.....	.....	.....	.....A.....	.....	240
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	S.GGELVFQT	SV.GL.LGAT	IYLIGFDGTA	VITRAVAA.N	GLT.GTDNL.	PFN.VIPT.E	300
CEF94-PP:	V.....	H.V.....	.....N.	.....T.....	.....L.....	.....N.	300
D6948-PP:	I.....	Q.I.....	.....D.	.....A.....	.....M.....	.....S.	300
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	ITQPITSIKL	EIVTSKSGGQ	AGDQMSWSA.	GSLAVTIHGG	NYPGALRPVT	LVAYERVATG	360
CEF94-PP:	.....	.....	.....R.....	.....	.....	.....	360
D6948-PP:	.....	.....	.....S.....	.....	.....	.....	360
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	SVVTVAGVSN	FELIPNPELA	KNLVTEYGRF	DPGAMNYTKL	ILSERDRLGI	KTVWPTREYT	420
CEF94-PP:	.....	.....	.....	.....	.....	.....	420
D6948-PP:	.....	.....	.....	.....	.....	.....	420
TY89-PP:	-----	-----	-----	-----	-----	-----	



FIG. 3A (Contd.)

CONSENSUS:	DREYFMEVA	DLNSPLKIAG	AFGKDIIRA	.RRIAPVVS	TLFPPAAPLA	HAIGGVDDL	480
CEF94-PP:	.....	.....	.....	I.....	.....	.....	480
D6948-PP:	.....	.....	.....	L.....	.....	.....	480
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	LGDEAQAAG	TARAASGAR	AASGRIRQLT	LAADKGYEVV	ANLFQVPQNP	VVDGILASPG	540
CEF94-PP:	.....	.....	.....	.....	.....	.....	540
D6948-PP:	.....	.....	.....	.....	.....	.....	540
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	.LRGAHNLDC	VLREGATLFP	VVITTVEDAM	TPKALNSKMF	AVIEGVREDL	QPPSQSGSFI	600
CEF94-PP:	V.....	.....	.....	.....	.....	.....	600
D6948-PP:	I.....	.....	.....	.....	.....	.....	600
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	RTLSGHRVYG	YAPDGVLPLE	TGRDYTEVPI	DDVWDDSIML	SKDPIPIVG	NSGNLAIAYM	660
CEF94-PP:	.....	.....	.....	.....	.....	.....	660
D6948-PP:	.....	.....	.....	.....	.....	.....	660
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	DVFRPKVPIH	VAMTGALNA.	GEIE.VSFRS	TKLATAHRLG	LKLAGPGAFD	VNTG.NWATE	720
CEF94-PP:	.....	.....C.....	.....K.....	.....	.....	.....P.....	720
D6948-PP:	.....	.....Y.....	.....N.....	.....	.....	.....S.....	720
TY89-PP:	-----	-----	-----	-----	-----	-----	
CONSENSUS:	IKRFPHPNPRD	WDRPLYNLP	YLPPNAGROY	HLAMAASEFK	ETPELES AVR	AMEAAANVDP	780
CEF94-PP:	.....	.....	.....	.....	.....	.....	780
D6948-PP:	.....	.....	.....	D.....	.....	.....	780
TY89-PP:	--.....	.....	.....T....F	.....L.....	.....D....	.....D.....	58
CONSENSUS:	LFQSALSVFM	WLEENGIVTD	MANFALSDPN	AHRMRNFLAN	APQAGSKSOR	AKYGTAGYGV	840
CEF94-PP:	.....	.....	.....	.....	.....	.....	840
D6948-PP:	.....	.....	.....	.....	.....	.....	840
TY89-PP:	..R...Q...	.....	.....	.....K.....	.....	.....	118



FIG. 3A (Contd.)

CONSENSUS:	EARGPTPEEA	QREKOTRISK	KMETMGIYFA	TPEWVALNGH	RGPSGQLKY	WQNTREIPDP	900
CEF94-PP:	.....	.....	.....	.....	.....	.....	900
D6948-PP:	.....	.....	.....	.....	.....	.....	900
TY89-PP:	.....	.....	.....	.....	.....	.....E.	178
CONSENSUS:	NEDYLDYVHA	EKSRLASEEQ	ILRAATSIYG	APGOAEPPOA	FIDEVAKVYE	INHGRGPNQE	960
CEF94-PP:	.....	.....	.....	.....	.....	.....	960
D6948-PP:	.....	.....	.....	.....	.....	.....	960
TY89-PP:	....P.....	.....	V.....	.....	.....R.....	.....	238
CONSENSUS:	QMKDLLLTAM	EMKHRNPRRA	PPKPKPKPNA	PTQRPFGRLG	RWIRTVSEDE	LE	1012
CEF94-PP:	.....	.....	L.....	.....	.....	.....	1012
D6948-PP:	.....	.....	.....	.....	.....A.....	.....	1012
TY89-PP:	.....	.....	.....	S.....	.....	.....	290



FIG. 3B

CONSENSUS: MSD.FNSPOA RS.ISAAFGI KPTAGQDVEE LLIPKVVVPP EDPLASPSRL AKFLRENGYK	60
CEF94-VP1: ...I... ..T.....	60
D6948-VP1: ...V... ..K.....	60
CONSENSUS: .LQPSRLPEN EEYETDQILP DLAWMRQIEG AVLKPTLSLP IGDQEYFPKY YPTHRPSKEK	120
CEF94-VP1: V.....	120
D6948-VP1: I.....	120
CONSENSUS: PNAYPPDIAL LKQMIYLFLO VPEA...LKD EVTLITQNIR DKAYGSGTYM GQATRLVAMK	180
CEF94-VP1: .....NEG.....	180
D6948-VP1: .....TDN.....	180
CONSENSUS: EVATGRNPNK DPLKLGTYFE SIAQLLDITL PVGPPGEDDK PWVPLTRVPS RMLVLTGDVD	240
CEF94-VP1: ..... ..T.....	240
D6948-VP1: ..... ..A.....	240
CONSENSUS: G.FEVEDYLP KINKSSSGL PYVGRTKGET IGEMIAISNQ FLRELS.LLK QGAGTKGSNK	300
CEF94-VP1: .D.....	300
D6948-VP1: .E.....	300
CONSENSUS: KKLLSMLSDY WYLSGGLLFP KAERYDKSTW LTKTRNIWSA PSPTHLMISM ITWPVMSNSP	360
CEF94-VP1: ..... ..T.....	360
D6948-VP1: ..... ..A.....	360
CONSENSUS: NNVLNIEGCP SLYKFNPFRG GLNRIVEWI. AP.EPKALVY ADNIYIVHSN TWYSIDLEKG	420
CEF94-VP1: .....L..E.....	420
D6948-VP1: .....M..D.....	420
CONSENSUS: EANCTROHMQ AAMYIYLTRG WSDNGDPMFN QTWATEFAMNI APALVVDSSC LIMNLQIKTY	480
CEF94-VP1: ..... ..T.....	480
D6948-VP1: ..... ..A.....	480
CONSENSUS: GQSGNAATF INNHLSTLV LDQWNLM.QP .PDSEEFKSI EDKLGINFKEI ERSIDDIRGK	540
CEF94-VP1: .....R..R.....	540
D6948-VP1: .....K..S.....	540

FIG. 3B (Contd.)

CONSENSUS: LRQLV.LAQP	GYLSGGVEPE	Q.SPTVELDL	LGWSATYSKD	LGIYVPVLDK	ERLFCSAAYP	600
CEF94-VP1:	.....L.....	.....S.....	.....	.....	.....	600
D6948-VP1:	.....P.....	.....	.....	.....	.....	600
CONSENSUS: KGVENKSLKS	KVGIEQAYKV	VRYEALRLVG	GWNYPILLNKA	CKNNA.AARR	HLEAKGFPLD	660
CEF94-VP1:	.....	.....	.....	.....G.....	.....	660
D6948-VP1:	.....	.....	.....	.....S.....	.....	660
CONSENSUS: EFIAEWSLS	EFGEAFEGFN	IKLTVT.ESL	AELN.PVPPK	PPNVNRPVNT	GGLKAVSNAL	720
CEF94-VP1:	.....	.....S.....	.....K.....	.....	.....	720
D6948-VP1:	.....	.....P.....	.....R.....	.....	.....	720
CONSENSUS: KTGRYRNEAG	LSGLVLLATA	RSRLQDAVKA	KAEAEKLHKS	KPDDPDADWF	ERSETLSDLL	780
CEF94-VP1:	.....	.....	.....	.....	.....	780
D6948-VP1:	.....	.....	.....	.....	.....	780
CONSENSUS: EKADIASKVA	HSALVETSDA	LEAVQSTSVY	TPKYPEVKNP	QTASNPPVVL	HLPKAKRATGV	840
CEF94-VP1:	.....	.....	.....	.....	.....	840
D6948-VP1:	.....	.....	.....	.....	.....	840
CONSENSUS: QAALLGAGTS	RPMGMEAPTR	SKNAVKMAKR	RQRQKESRQ.	.	.	881
CEF94-VP1:	.....	.....	.....	.....Q	.....P	881
D6948-VP1:	.....	.....	.....	.....-	.....-	879



FIG. 3C

CONSENSUS:	MVSRDQTNDR	SDD.PARSNP	TDCSVHTEPS	DANNRTGVHS	GRHP.EAHSQ	VRDLDLQFDC	60
D6948-VP5:	.....	..E.....	.....	.....	...R.....	.....	60
CEF94-VP5:	.....	..K.....	.....	.....	...G.....	.....	60
CONSENSUS:	GGHRVRANCL	FPW.PWLNCG	CSLHTAEQWE	LQVRSDAPDC	PEPTGQLQLL	QASESESHSE	120
D6948-VP5:	.....	..F.....	.....	.....	.....	.....	120
CEF94-VP5:	.....	..I.....	.....	.....	.....	.....	120
CONSENSUS:	VKHT.WWRLC	TK.HHKRRDL	PRKPE				145
D6948-VP5:	....P.....	..W.....	.....				145
CEF94-VP5:	....S.....	..R.....	.....				145



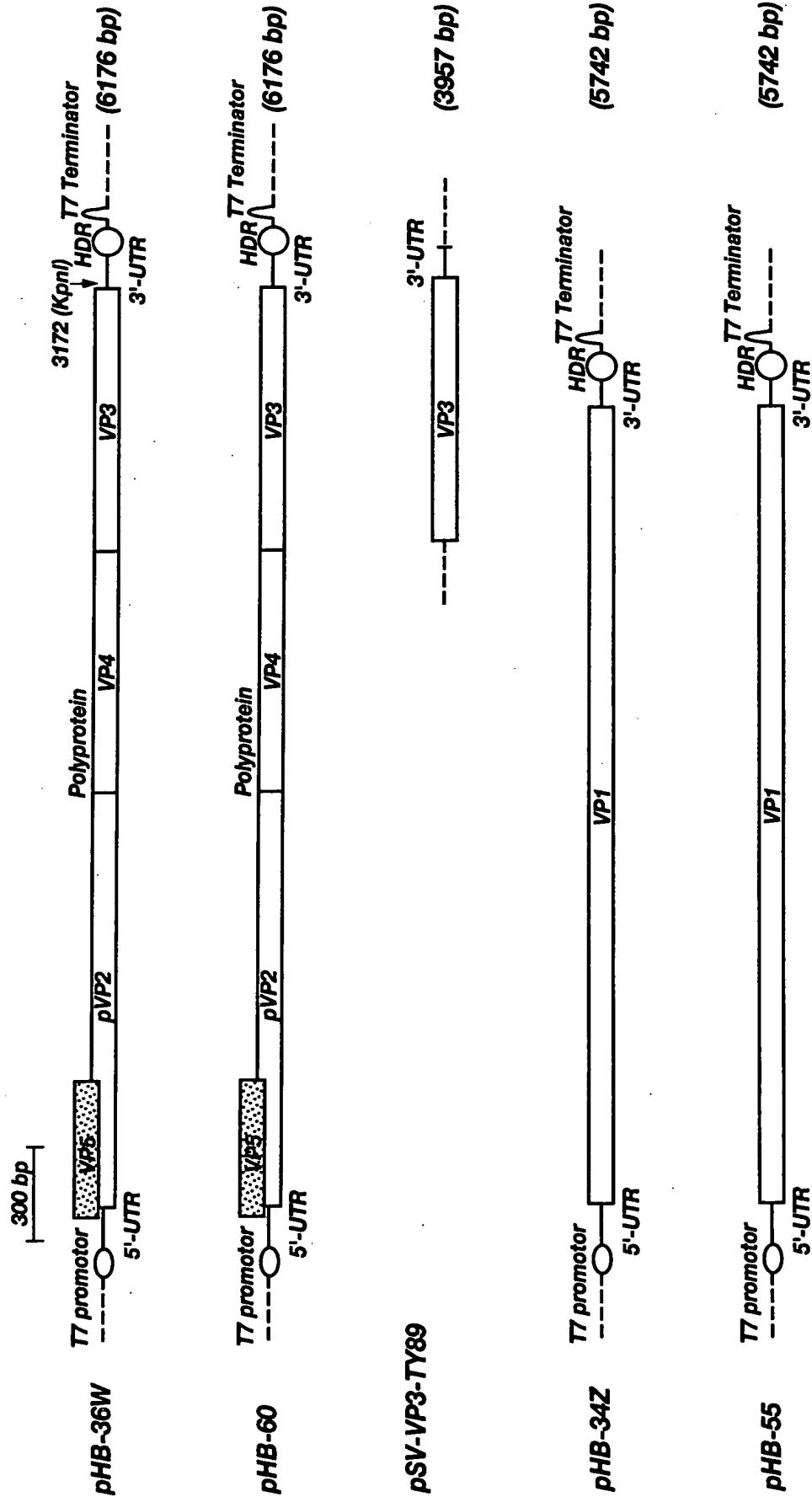


FIG. 4

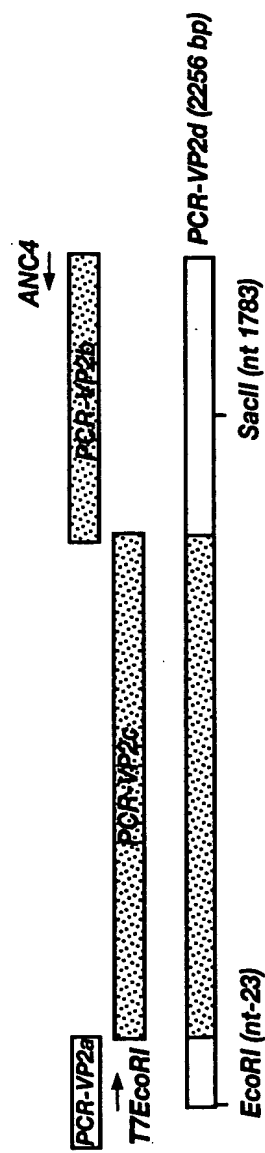
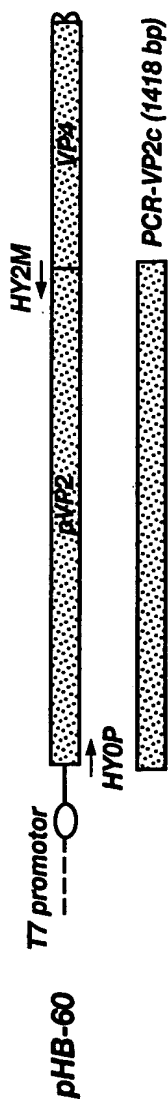
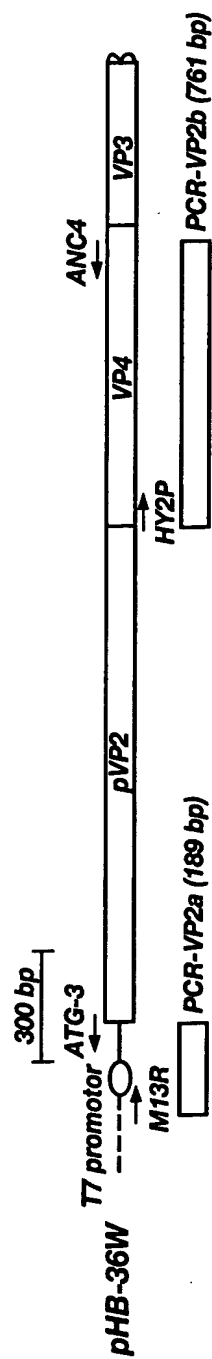


FIG. 5A



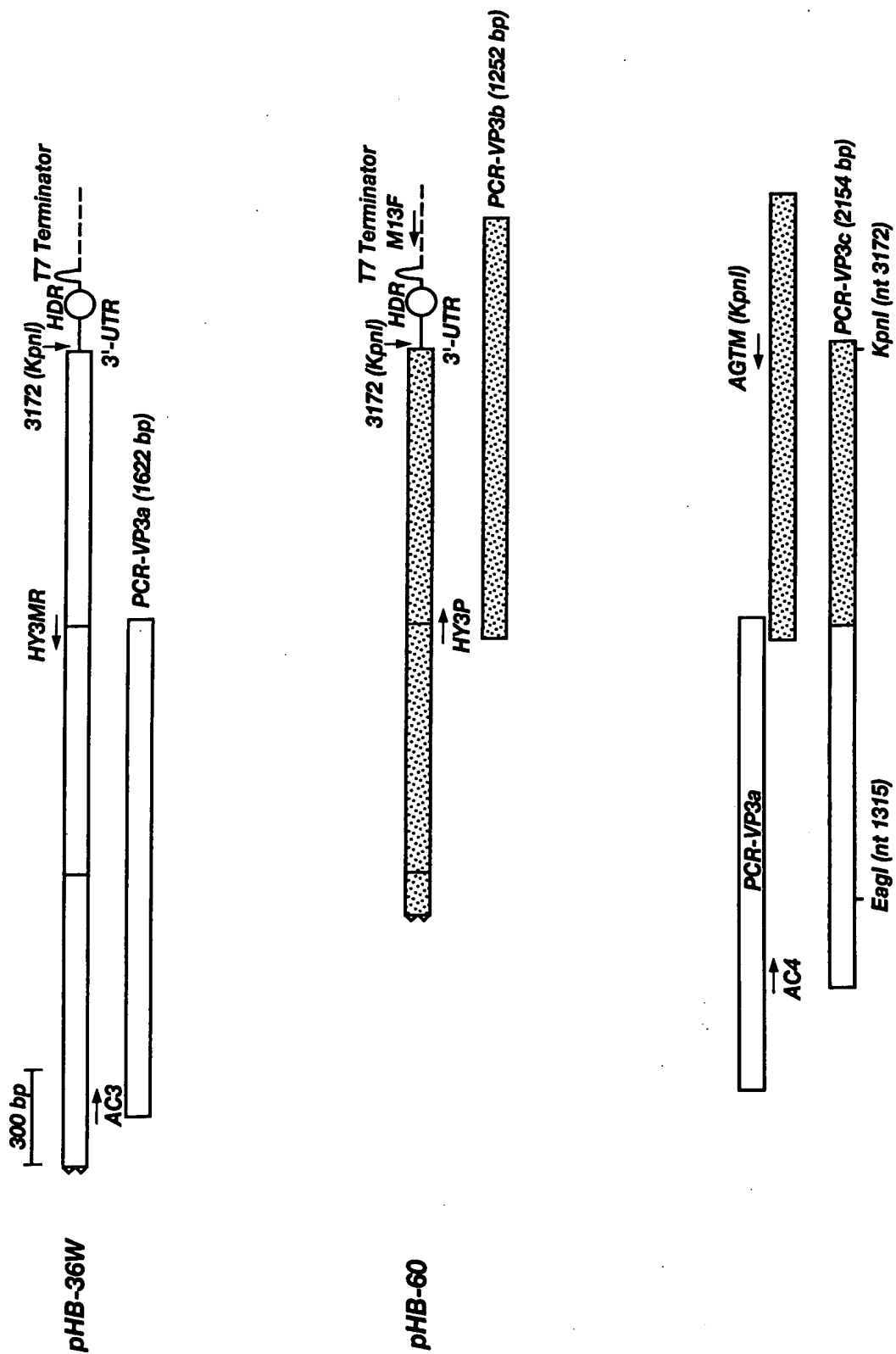


FIG. 5B

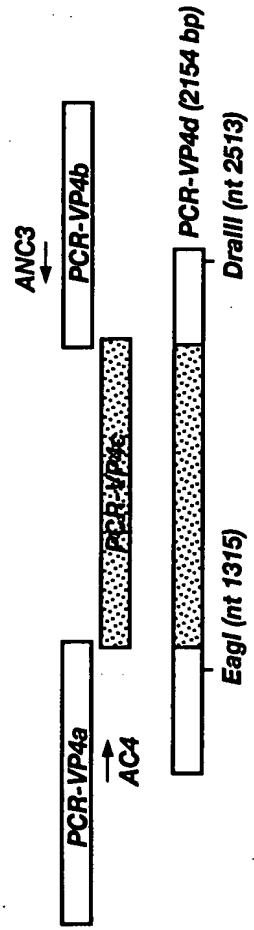
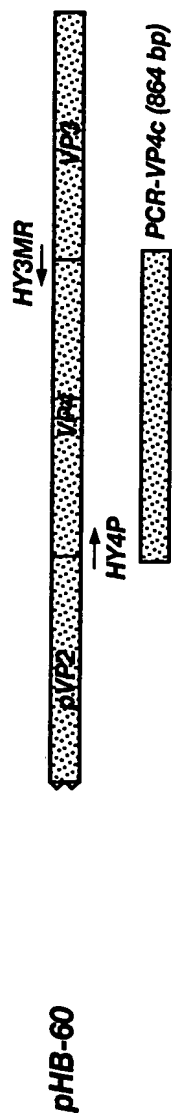
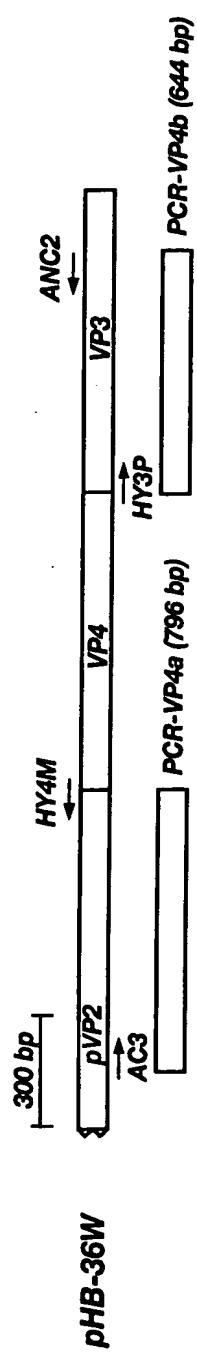


FIG. 5C

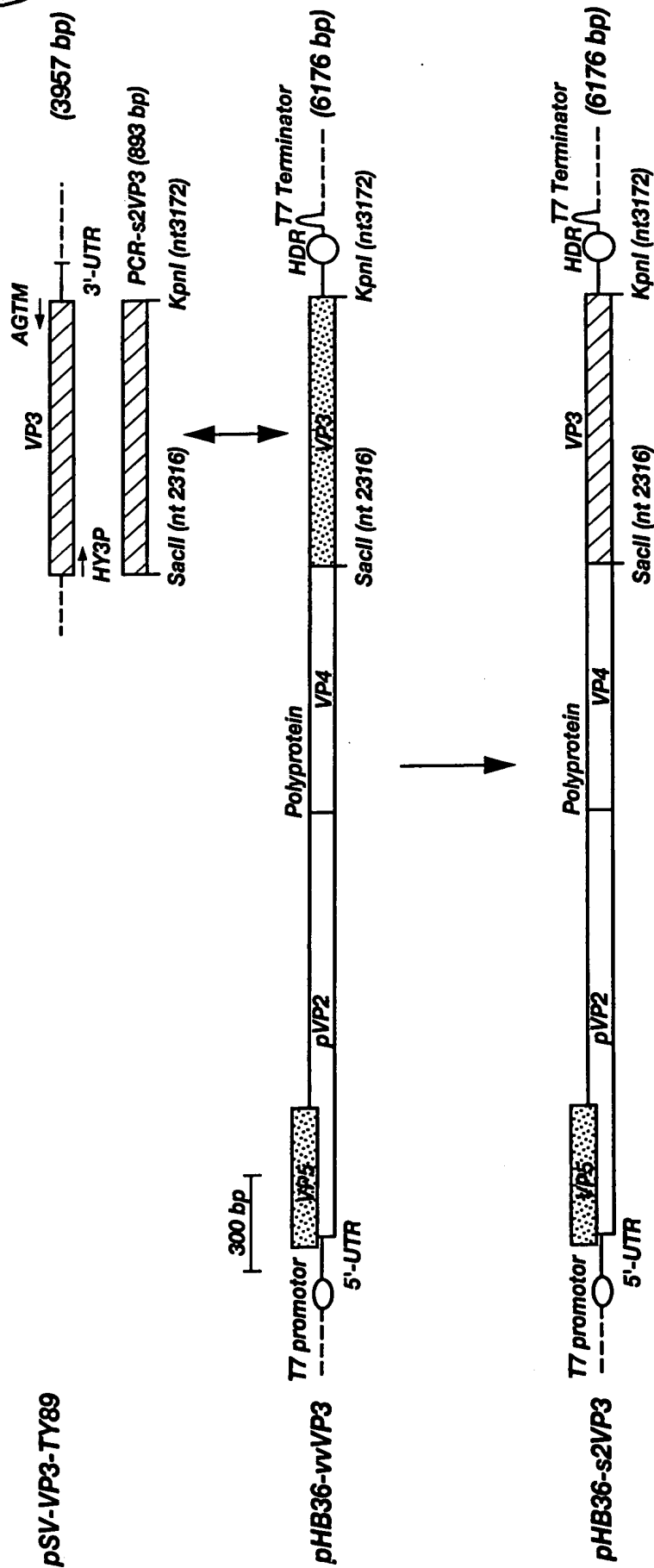


FIG. 5D

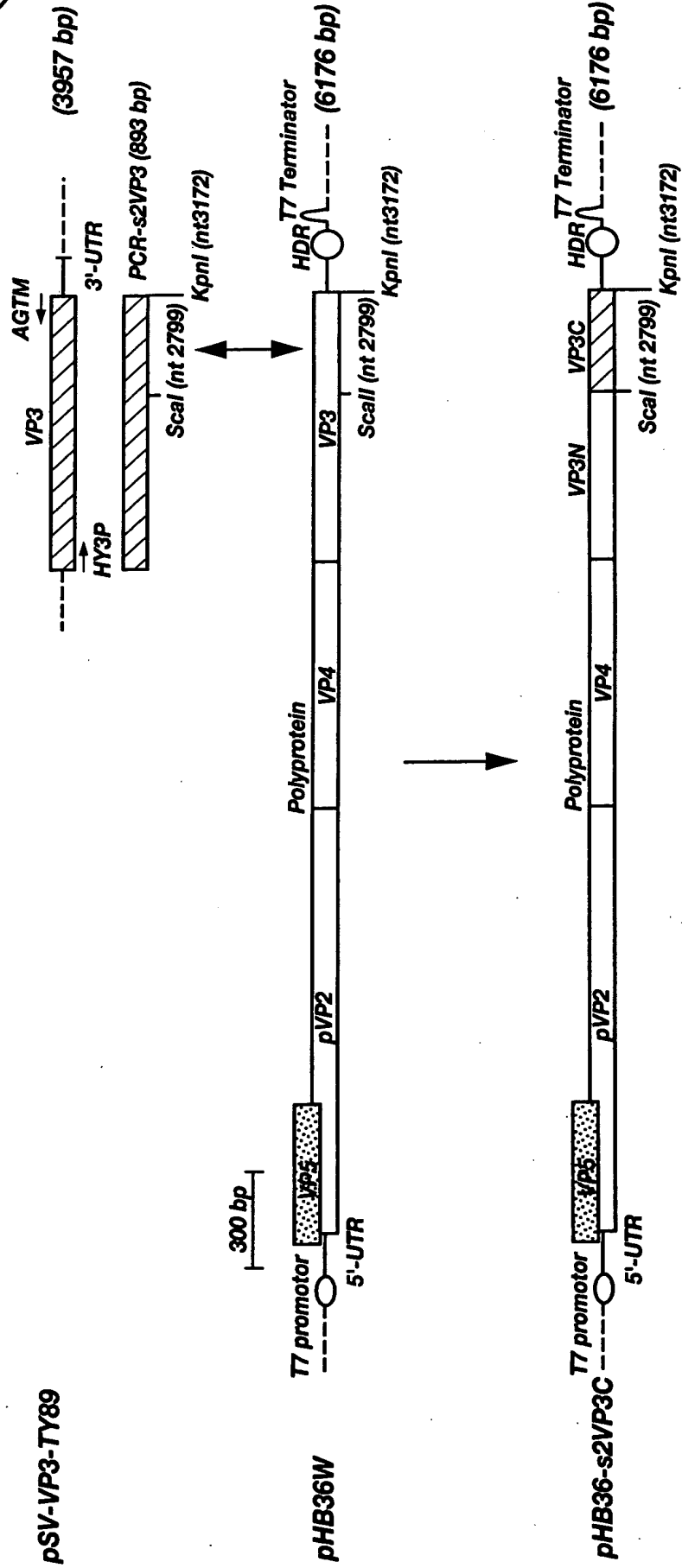


FIG. 5E

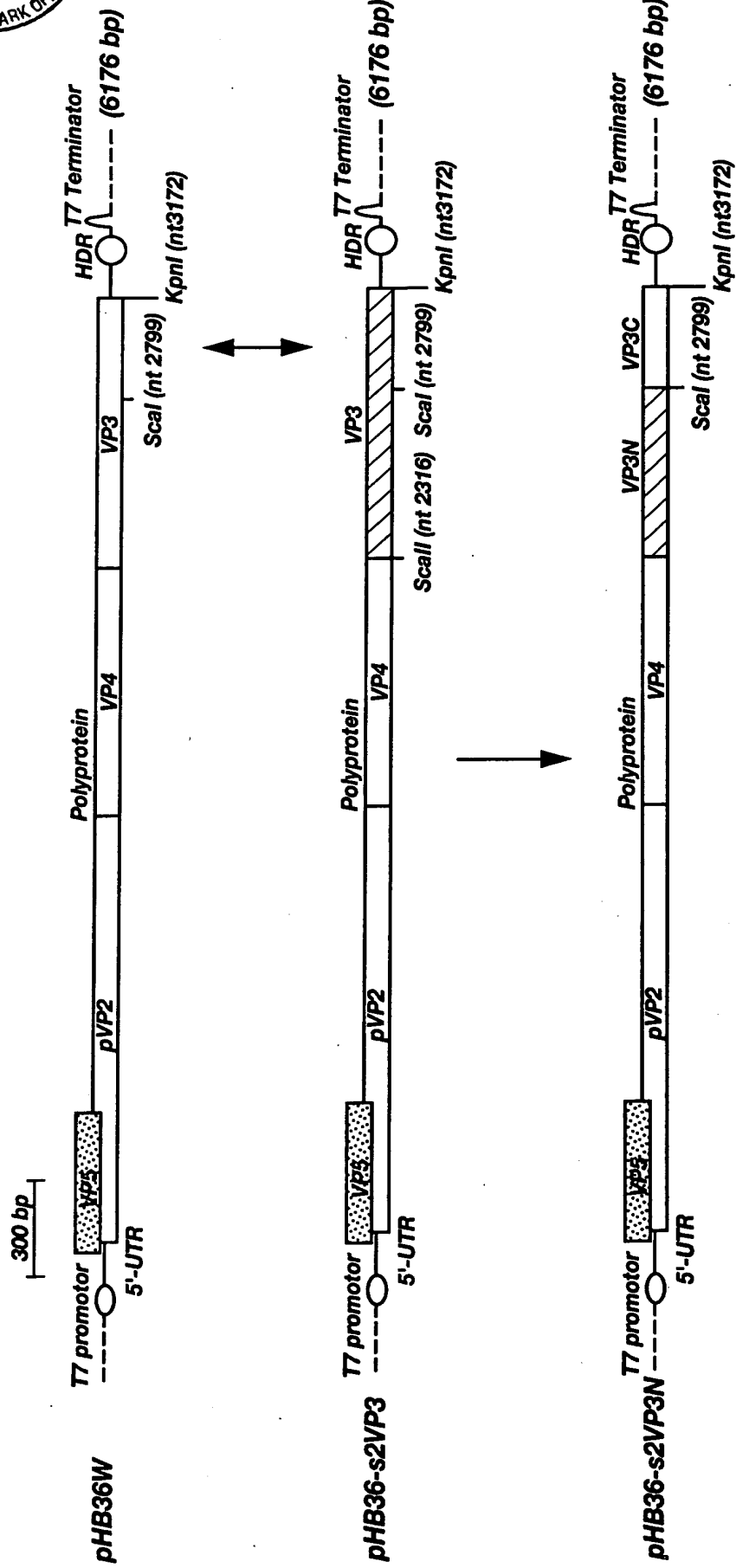


FIG. 5F

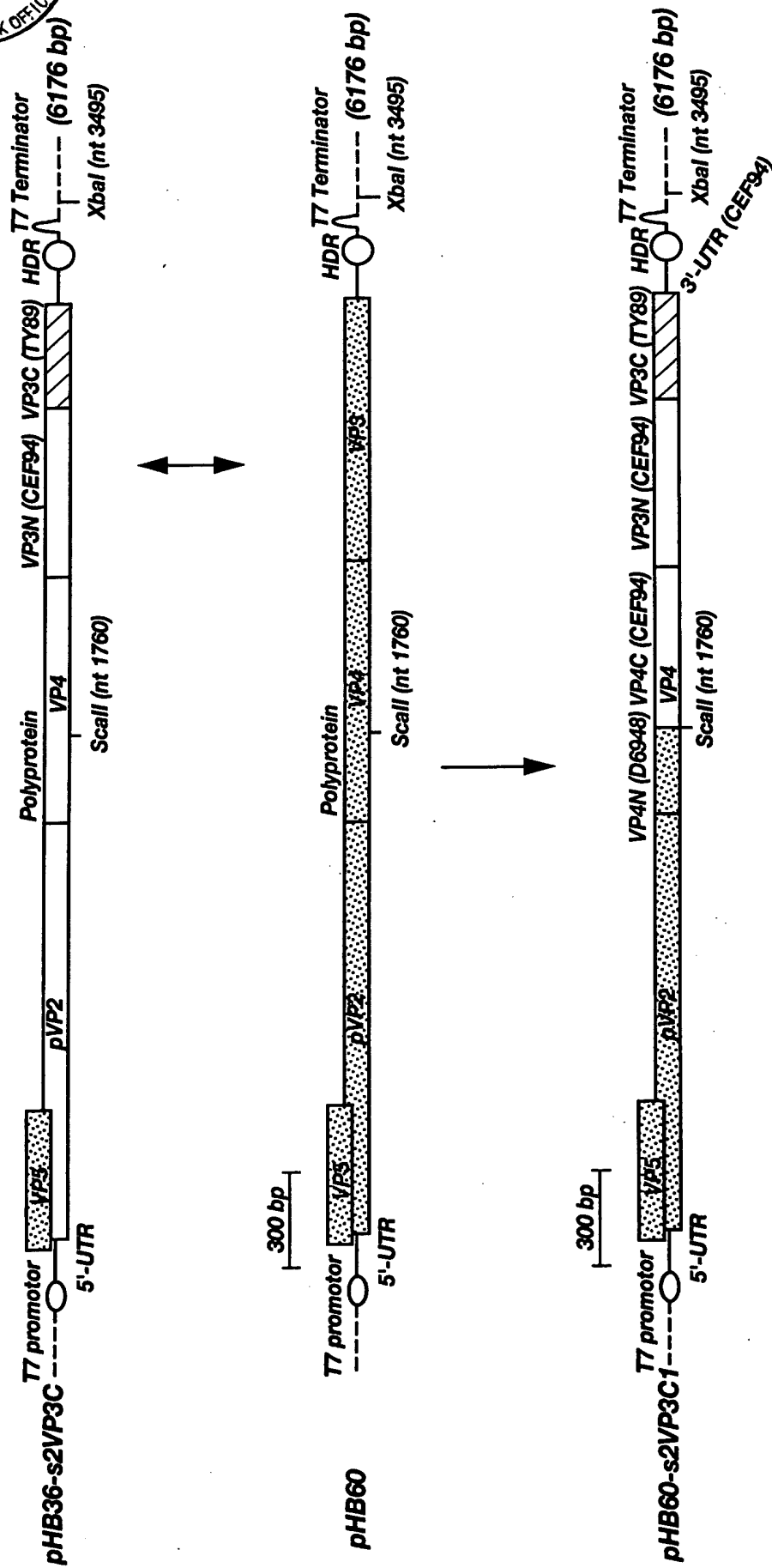


FIG. 6



				VP4 ← → VP3	
	← SacII				
CEF94-PP:	724-FPHNPRD	WDRLPYLNLP	YLPPNAGRQY	HLMAAASEFK	ETPELESVR AMEAAANVDP 780
TY89-PP:	724-.....	.....T.....F	.....L.....	.....D....	..D..... 780
CEF94-PP:	LFQSALSVFM	WLENGIVTD	MANFALSDPN	AHRMRNFLAN	APQAGSKSOR AKYGTAGYGV 840
TY89-PP:	..R...Q...	.....	.....	.....K.....	..... 840
CEF94-PP:	EARGPTPEEA	QREKDRISK	KMETMGIYFA	TPEWVALNGH	RGPSGQLKY WQNTREIPDP 900
TY89-PP:	.....	.....	.....	.....	.....E. 900
		← SacI			
CEF94-PP:	NEDYLDYVHA	EKSRLASEEQ	ILRAATSIYG	APGQAEPPQA	FIDEVAKVYE INHGRGNQE 960
TY89-PP:	....P....	.....V.....	.....	.....R....	..... 960
CEF94-PP:	QMKDLLLTAM	EMKHRNPRRA	LPKPKPKPNA	PTQRPFGRLG	RWIRTVSEDE LE 1012
TY89-PP:	.....	.....P.....	.....S.....	.....	..... 1012

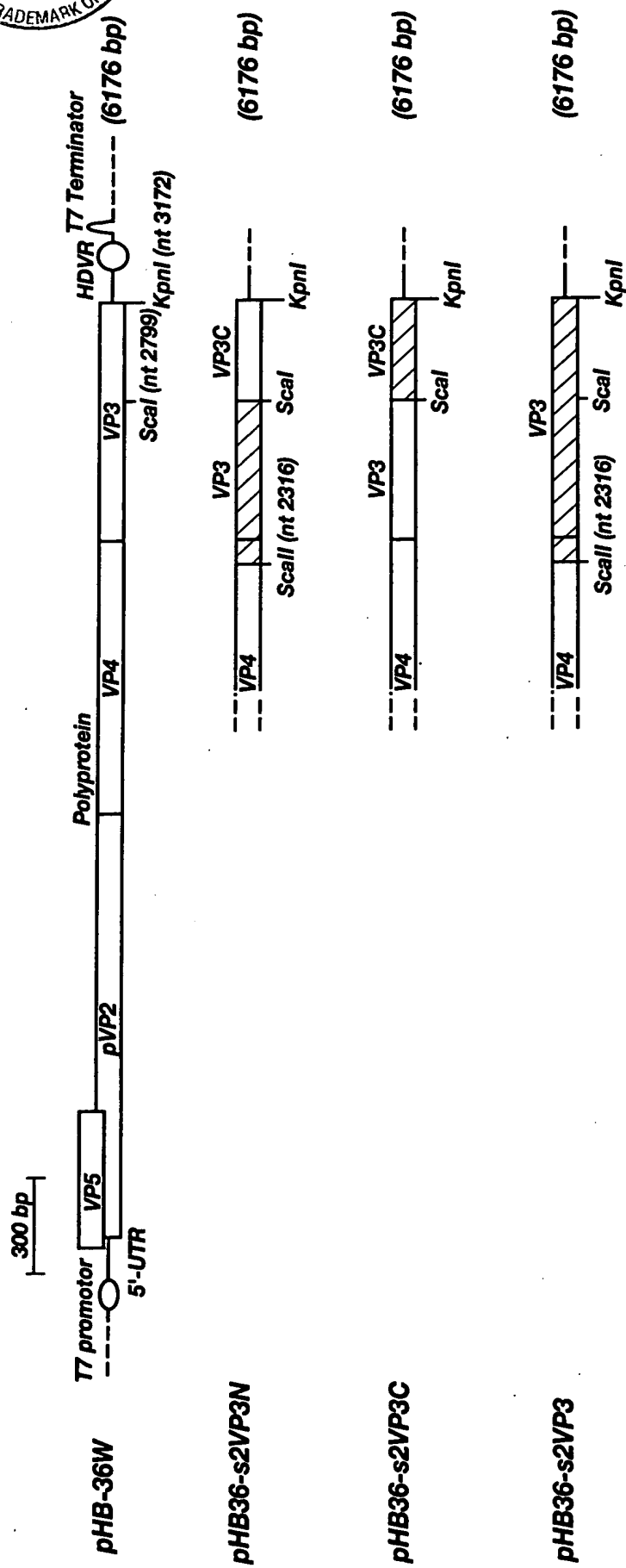


FIG. 7



FIG. 8A

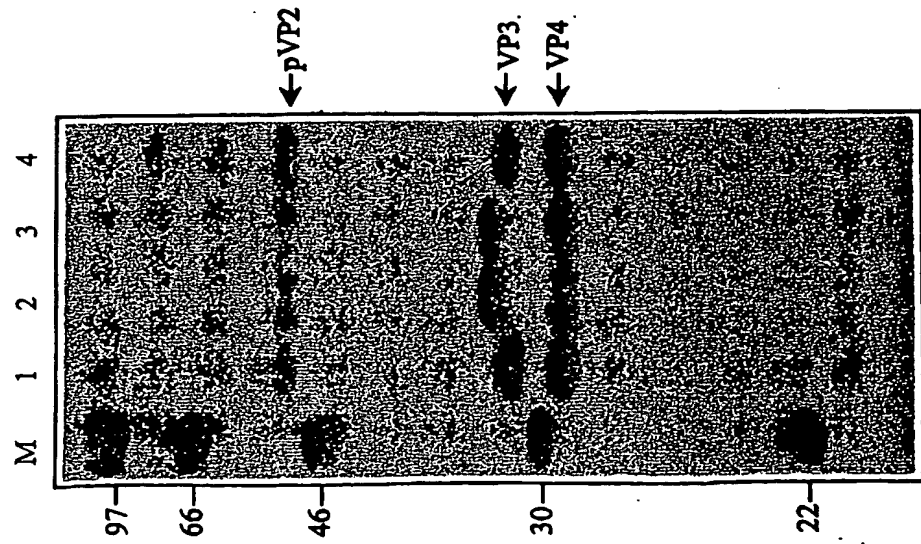


FIG. 8B

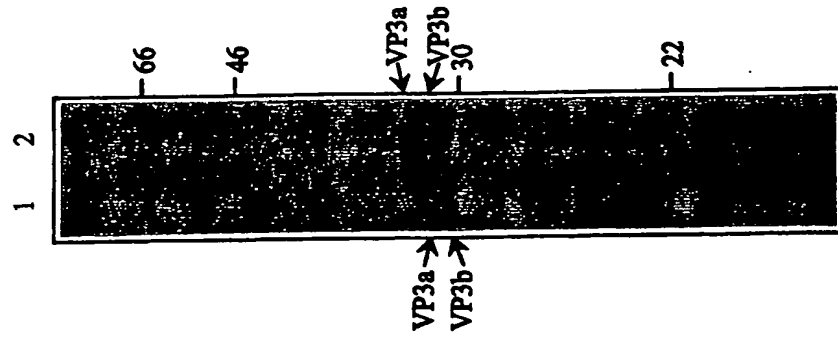
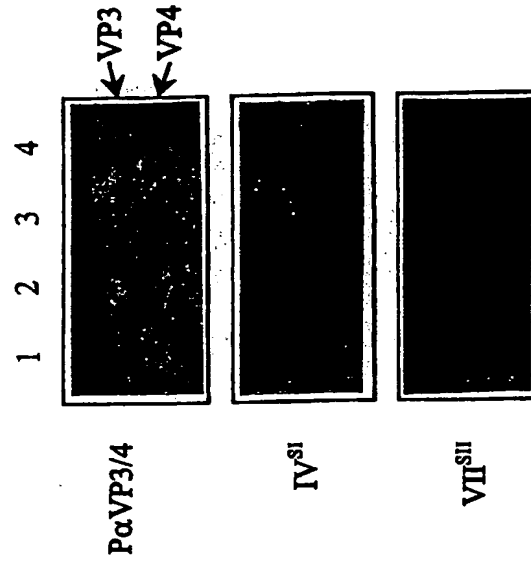


FIG. 8C



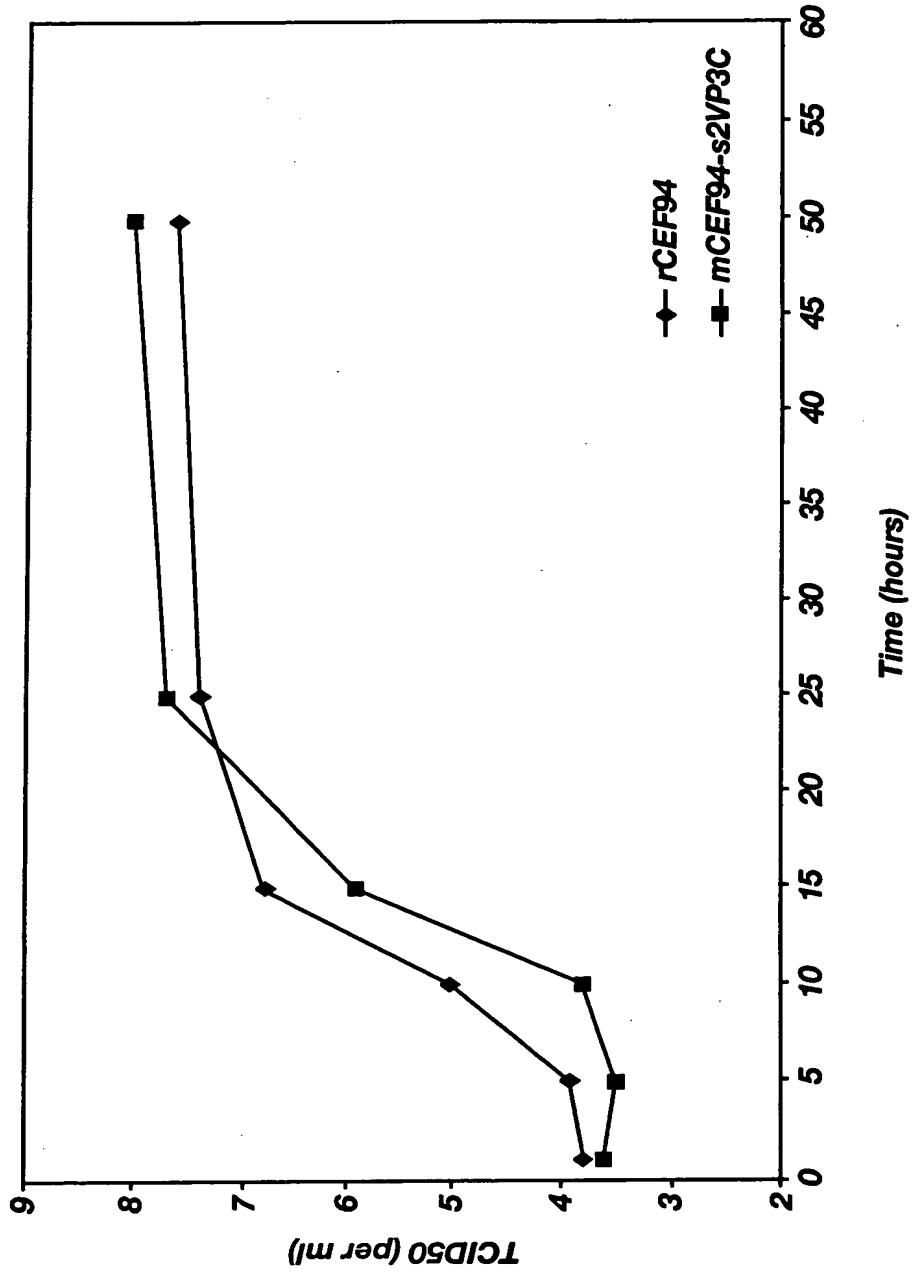
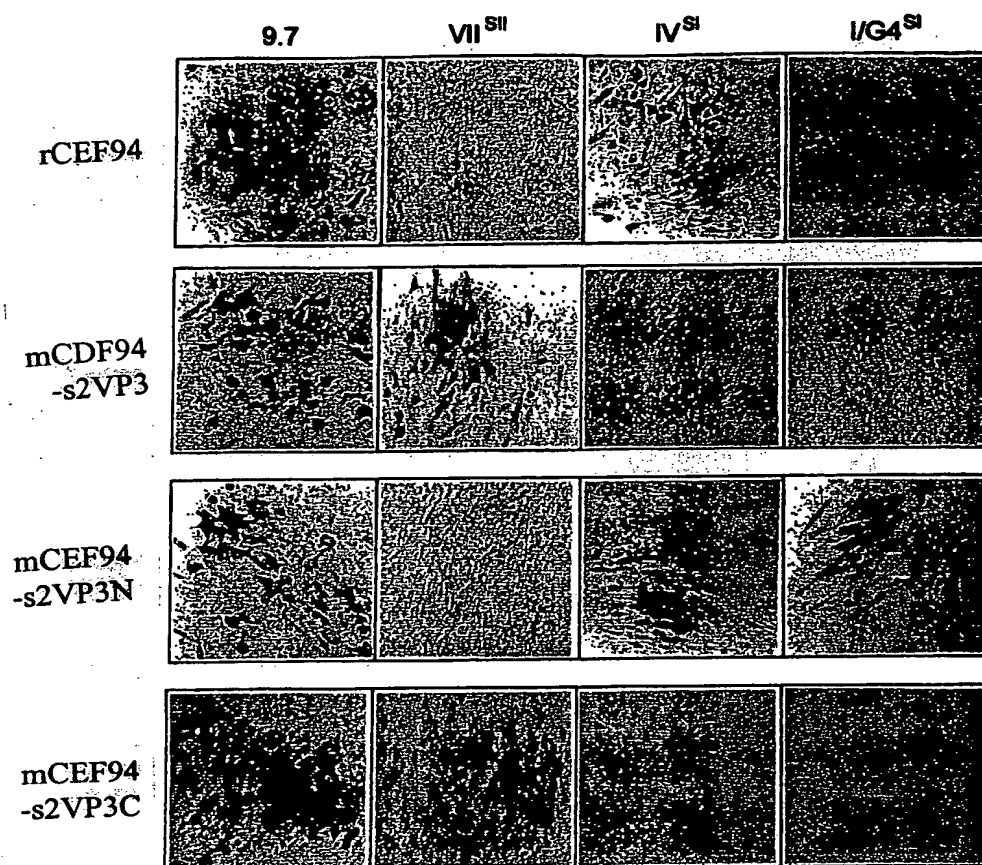


FIG. 9



FIG. 10



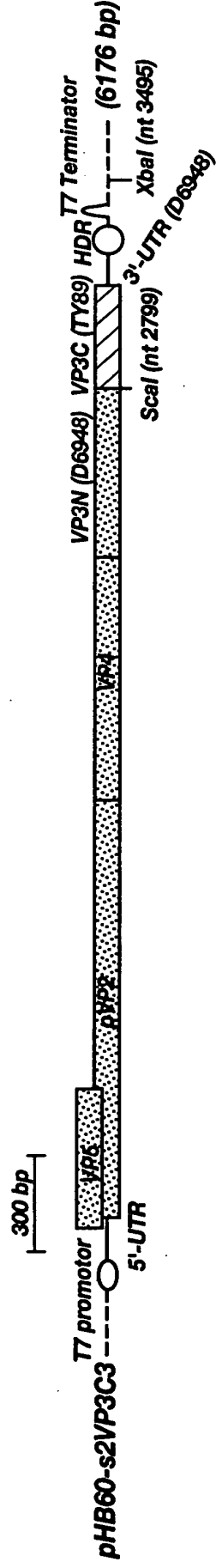
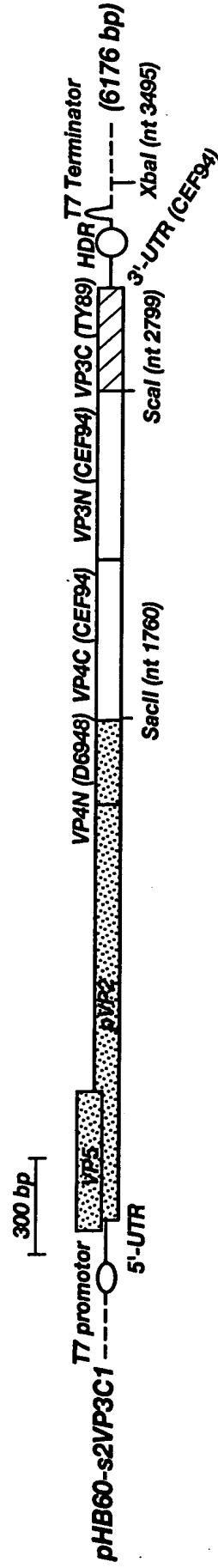


FIG. 11



FIG. 12

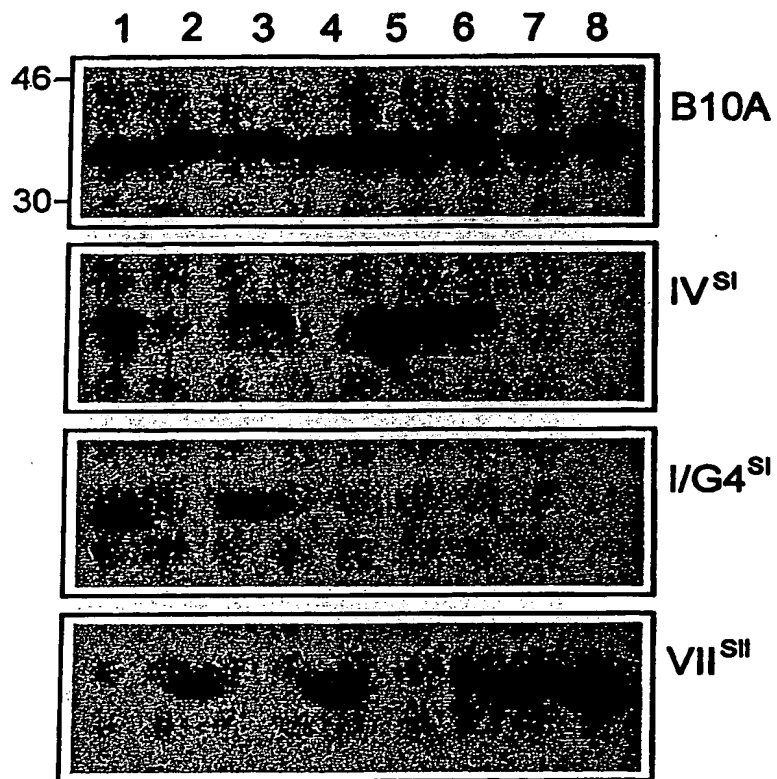


FIG. 13

VP4 ← VP3

← SacII

CEF94-PP: 724-FPHNPRD WDRLPYLNLP YLPPNAGRQY HLA MAASEFK ETPELESVR AMEAAANVDP 780
D6948: D
TY89-PP: 724-..... T..... F..... L..... D..... D..... 780

CEF94-PP: LFQSALSVFM WLENGIVTD MANFALSDPN AHRMRNFLAN APQAGSKSQR AKYGTAGYGV 840
D6948:
TY89-PP: ..R...Q... ..K..... 840

← SacI

CEF94-PP: EARGTPPEEA QREKDRISK KMETMGIYFA TPEWVALNGH RGPSPGQLKY WQNTREIPDP 900
D6948:
TY89-PP: V..... R..... E. 900

CEF94-PP: NEDYLDYVHA EKSRLASEEQ ILRAATSIYG APQAEPPQA FIDEVAKVYE INHGRGNQE 960
D6948: P.....
TY89-PP: V..... R..... 960

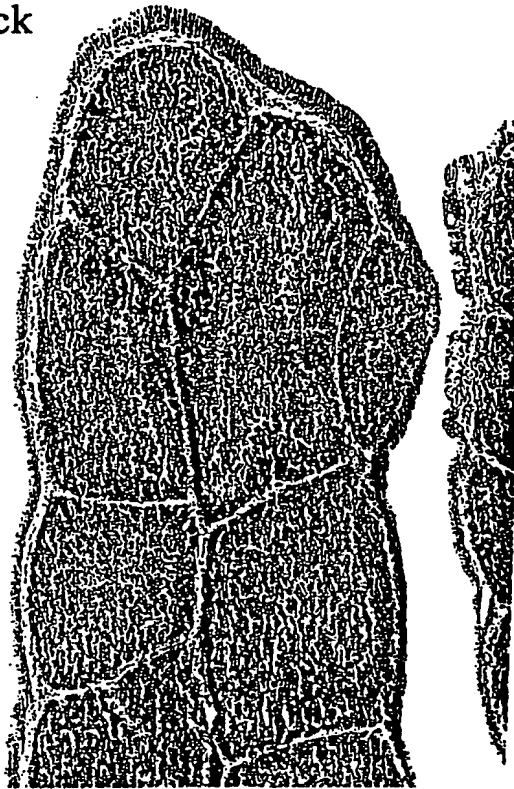
CEF94-PP: QMKDLLLTAM EMKHRNPRRA LPKPKPKPNA PTQRPGRGLG RWIRTVSEDE LE 1012
D6948: P..... A.....
TY89-PP: P..... S..... 1012





FIG. 14

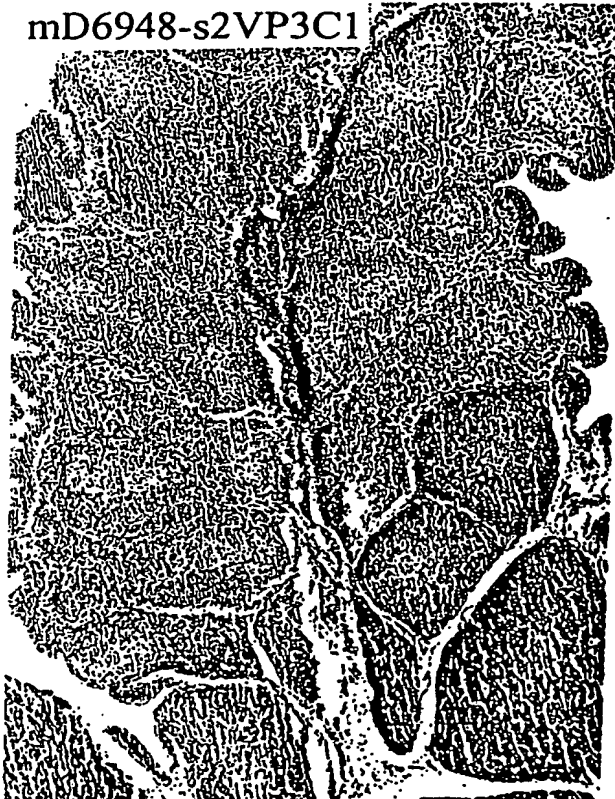
Mock



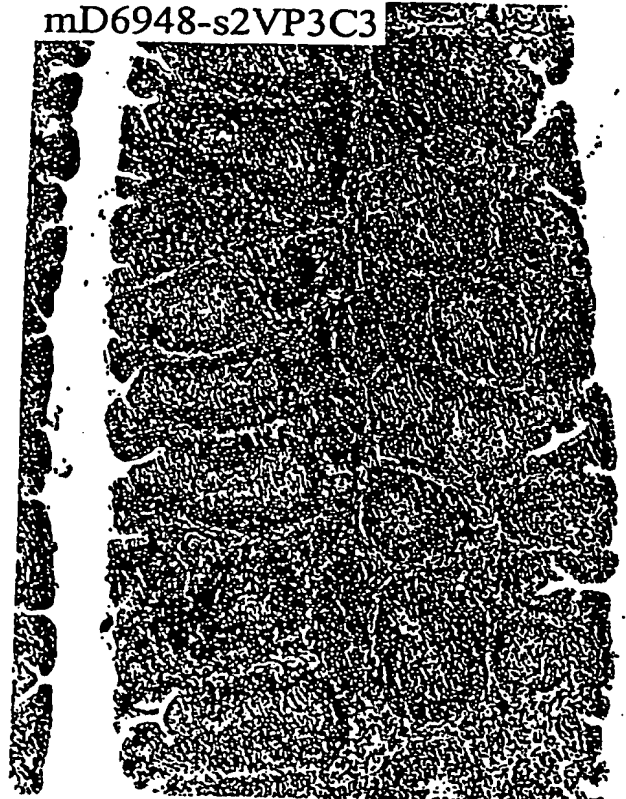
D6948



mD6948-s2VP3C1



mD6948-s2VP3C3



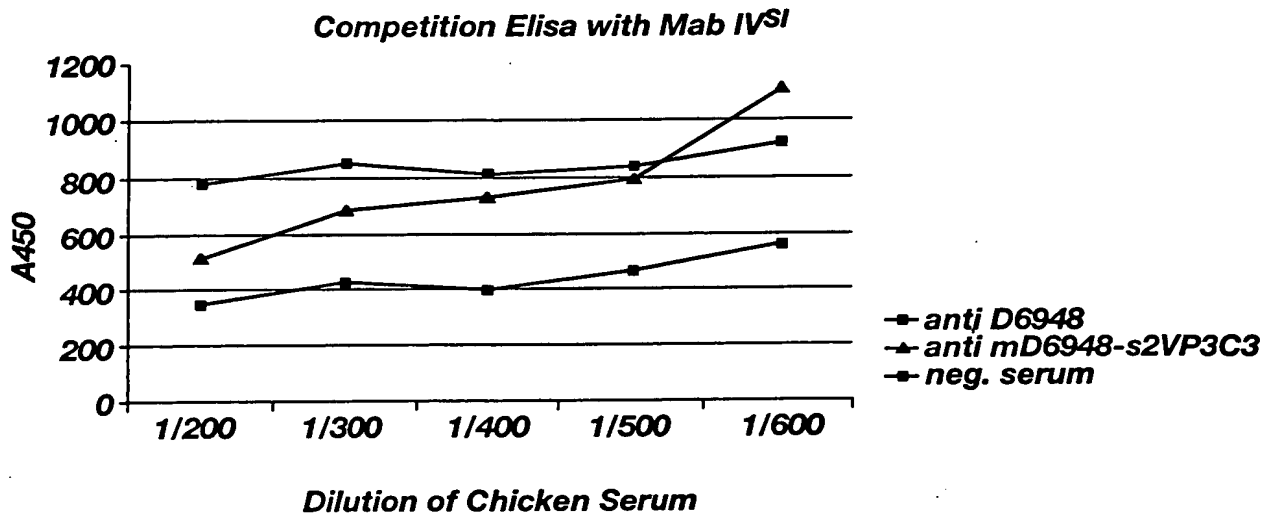
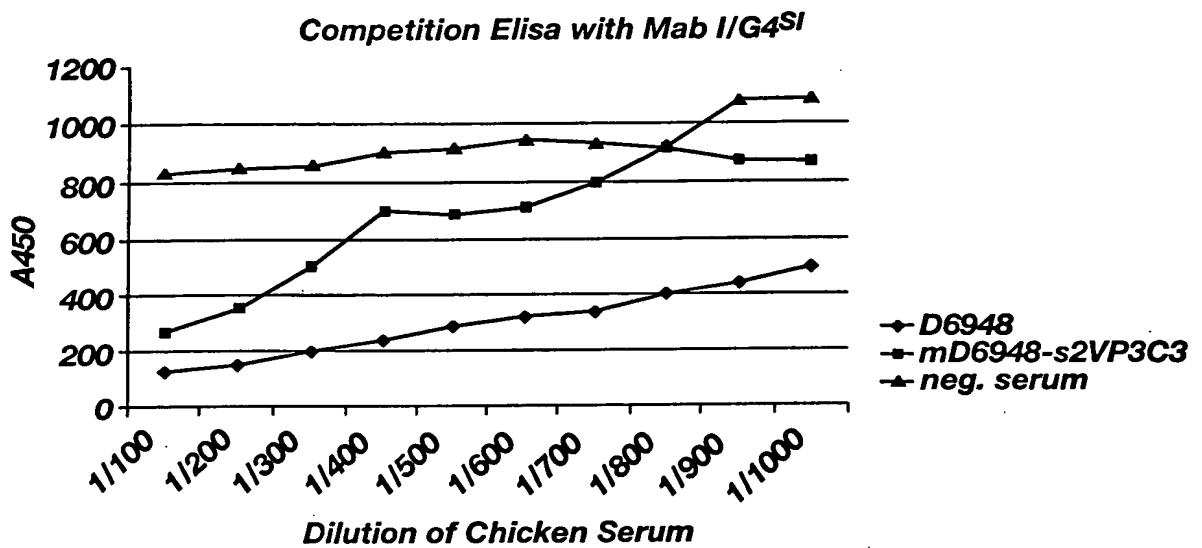


FIG. 15

FIG. 16A

D6948-VP5: MSLMVSRDQ TNDRSSDEPA RSNPTDCSVH TEPDANNRT GVHSGRHPRE AHSQVRDLDL 60
 CEF94-VP5: ----.K..G. 56

D6948-VP5: QFDCGGHRVR ANCLFPWFPM LNCGCSLHTA EQWELQVRSD APDCPEPTGQ LQLLOASESE 120
 CEF94-VP5:I.. 116

D6948-VP5: SHSEVKHTPW WRLCTKWHHK RRDLPKPE 149
 CEF94-VP5:S.R... 145

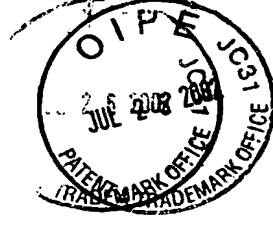




FIG. 16B (Contd.)

D6948-PP:	IKRFPNPRD	WRLPYLNLP	YLPNAGRQY	DLAMAASEEK	ETPELESVR	AMEAAANVDP	780
CEF94-PP:	.....	.....	.....	H.....	.....	.....	780
D6948-PP:	LFQSALSVFM	WLENGIVTD	MANFALSDPN	AHRMRNFLAN	APQAGSKSOR	AKYGTAGYGV	840
CEF94-PP:	.....	.....	.....	.....	.....	.....	840
D6948-PP:	EARGPTPEEA	QREKDTTRISK	KMETMGIYFA	TPEWVALNGH	RGSPGQLKY	WQNTREIPDP	900
CEF94-PP:	.....	.....	.....	.....	.....	.....	900
D6948-PP:	NEDYLDYVHA	EKSRLASEEQ	ILRAATSIYG	APQAEPPQA	FIDEVAKVYE	INHGRGPNQE	960
CEF94-PP:	.....	.....	.....	.....	.....	.....	960
D6948-PP:	QMKDLLLTAM	EMKHRNPRRA	PPKPKPKPNA	PTQRPGRLG	RWIRAVSDED	LE	1012
CEF94-PP:	.....	.....	L.....	.....	.....T.....	..	1012

FIG. 16C

D6948-VP1: MSDVFNPOA RSKISAAFGI KPTAGQDVEE LLIPKVVPP EDPLASPSRL AKFLRENGYK 60
 CEF94-VP1: ...I..... .T..... 60

D6948-VP1: ILQPRSLPEN EEYETDQILP DLAWMRQIEG AVLKPTLSLP IGDQYFPHY YPTHRPSKEK 120
 CEF94-VP1: V..... 120

D6948-VP1: PNAYPPDIAL LQMIYLFLO VPEATDNLKD EVTLTQIR DKAYGSGTYM QOATRLVAMK 180
 CEF94-VP1:NEG... 180

D6948-VP1: EVATGRNPKN DPLKLGTYFE SIAQLLDITL PVGPPGEDDK PWVPLTRVPS RMLVLTGDDVD 240
 CEF94-VP1: 240

D6948-VP1: GEFEVEDYLP KINKSSSGL PYVGRTKGET IGEMIAISNQ FLRELSALLK QGAGTKGSNK 300
 CEF94-VP1: .D..... .T... 300

D6948-VP1: KKLMSLSY WYLSGGLFP KAERYDKSTW LTKTRNIWSA PSPTHLMISM ITWPVMSNSP 360
 CEF94-VP1: 360

D6948-VP1: NNVLNIEGCP SLYKFNPFRG GLNRIVEMIM APDEPKALVY ADNIYIVHSN TWYSIDLEK 420
 CEF94-VP1:L .E..... 420

D6948-VP1: EANCTRQHMQ AAMYYILTRG WSDNGDPMFN QTWATEAMNI APALVVDSSC LIMNLQIKTY 480
 CEF94-VP1: 480

D6948-VP1: GQSGNAATF INNHLSTLV LDQWNLMKQP SPDSEEFKSI EDKLGINFKI ERSIDDIRGK 540
 CEF94-VP1:R.. R..... 540

D6948-VP1: LRQLVPLAQP GYLSGGVEPE QPSPTVELDL LGWSATYSKD LGIYVPVLDK ERLFCSAAYP 600
 CEF94-VP1:L... .S..... 600

D6948-VP1: KGVENKSLKS KVGIEQAYKV VRYEALRLVG GWNYPLLKA CKNNASAARR HLEAKGFPLD 660
 CEF94-VP1:G.... 660

D6948-VP1: EFLAEWSELS EFGEAFEGFN IKLTVTPESL AELNRPVPPK PPNVNRPVNT GGLKAVSNAL 720
 CEF94-VP1:S... .K..... 720



FIG. 16C (Contd.)

D6948-VP1:	KTGRYRNEAG	LSGLVLLATA	RSRLQDAVKA	KAEAEKHLKS	KPDDPDADWF	ERSETLSDLL	780
CEF94-VP1:	.....	.....	.....	.....	.....	.....	780
D6948-VP1:	EKADIASKVA	HSALVETSDA	LEAVQSTSVY	TPKYPEVKNP	QTASNPPVGL	HLPKRAATGV	840
CEF94-VP1:	.....	.....	.....	.....	.....	.....	840
D6948-VP1:	QAALLGAGTS	RPMGMEAPTR	SKNAVKMAKR	RQRQESRQ-	-		879
CEF94-VP1:	.....	.....	.....	.....	.....	.....	881



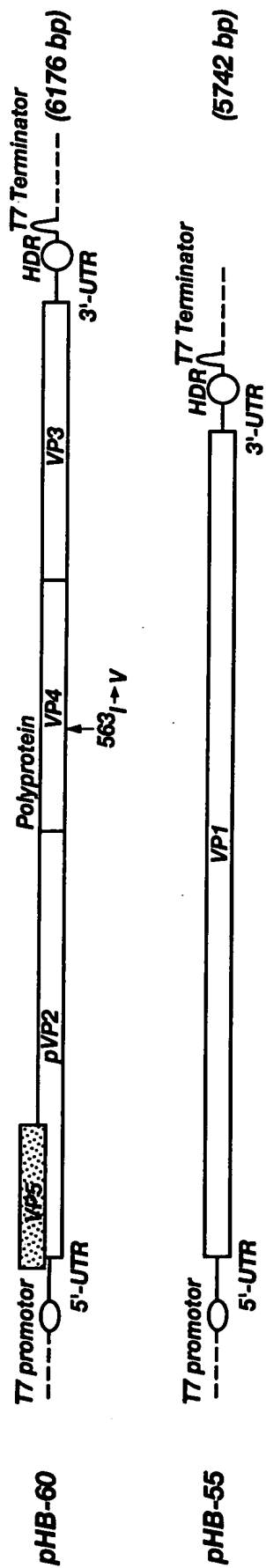


FIG. 17

FIG. 18A

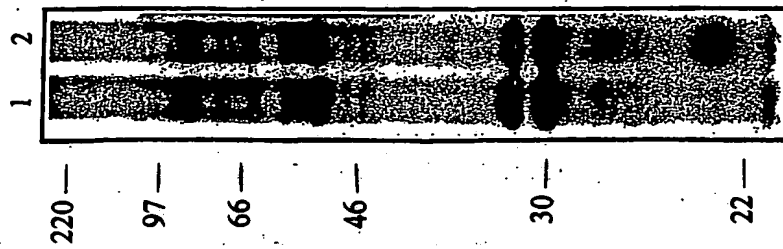


FIG. 18B

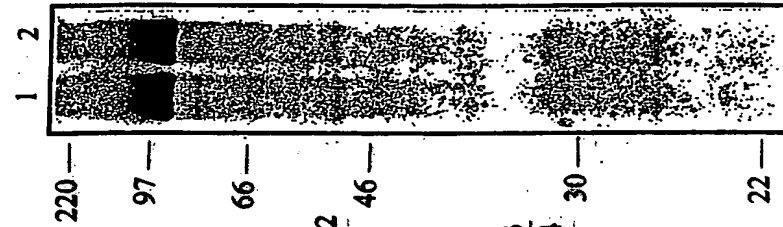


FIG. 18C

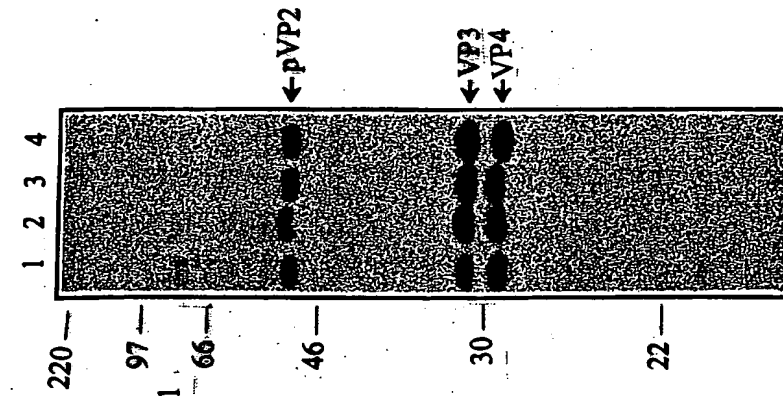
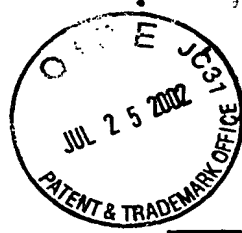
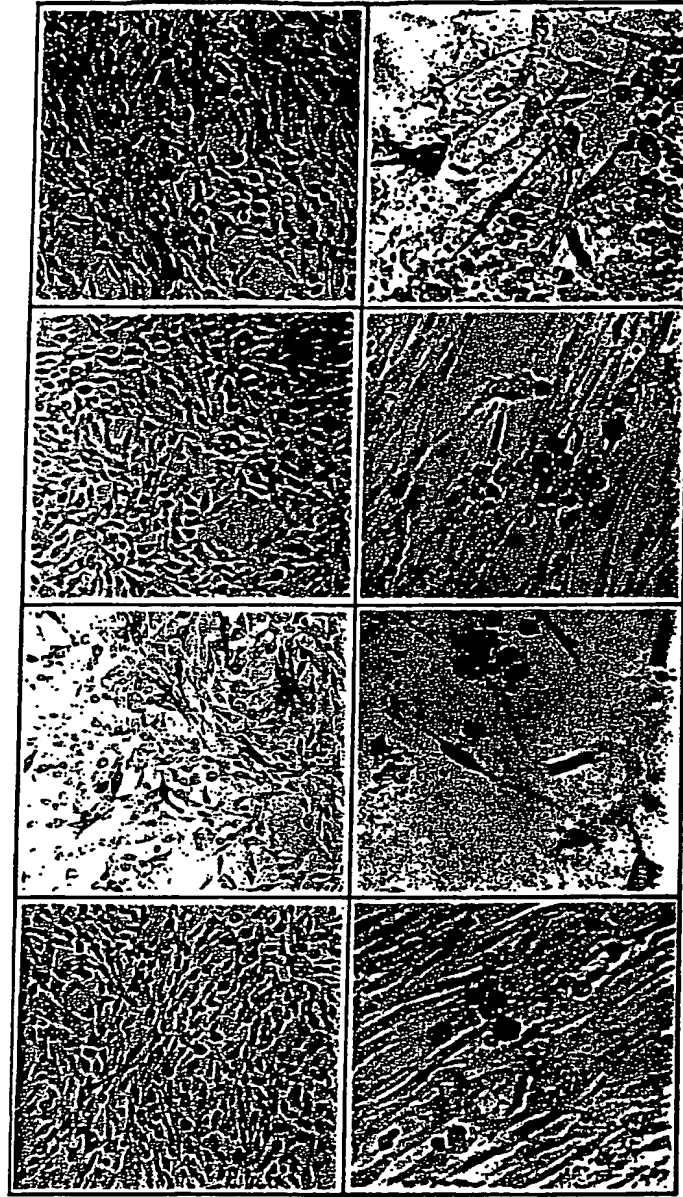


FIG. 19



rD4948 rCEF94 srIBDV-DACB srIBDV-CADB



QM5 cells

Bursa cells

rD4948 rCEF94 srIBDV-DACB srIBDV-CADB

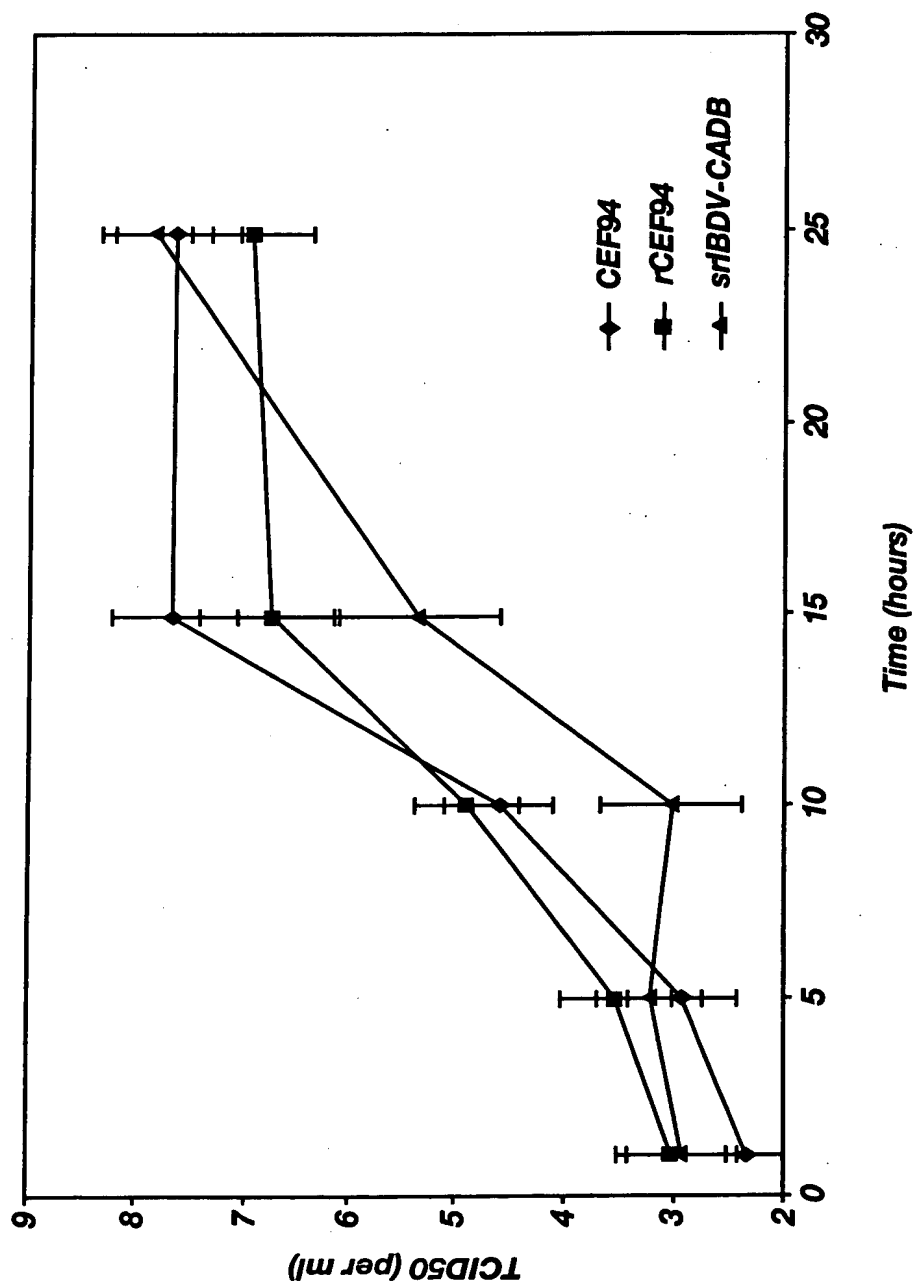


FIG. 20

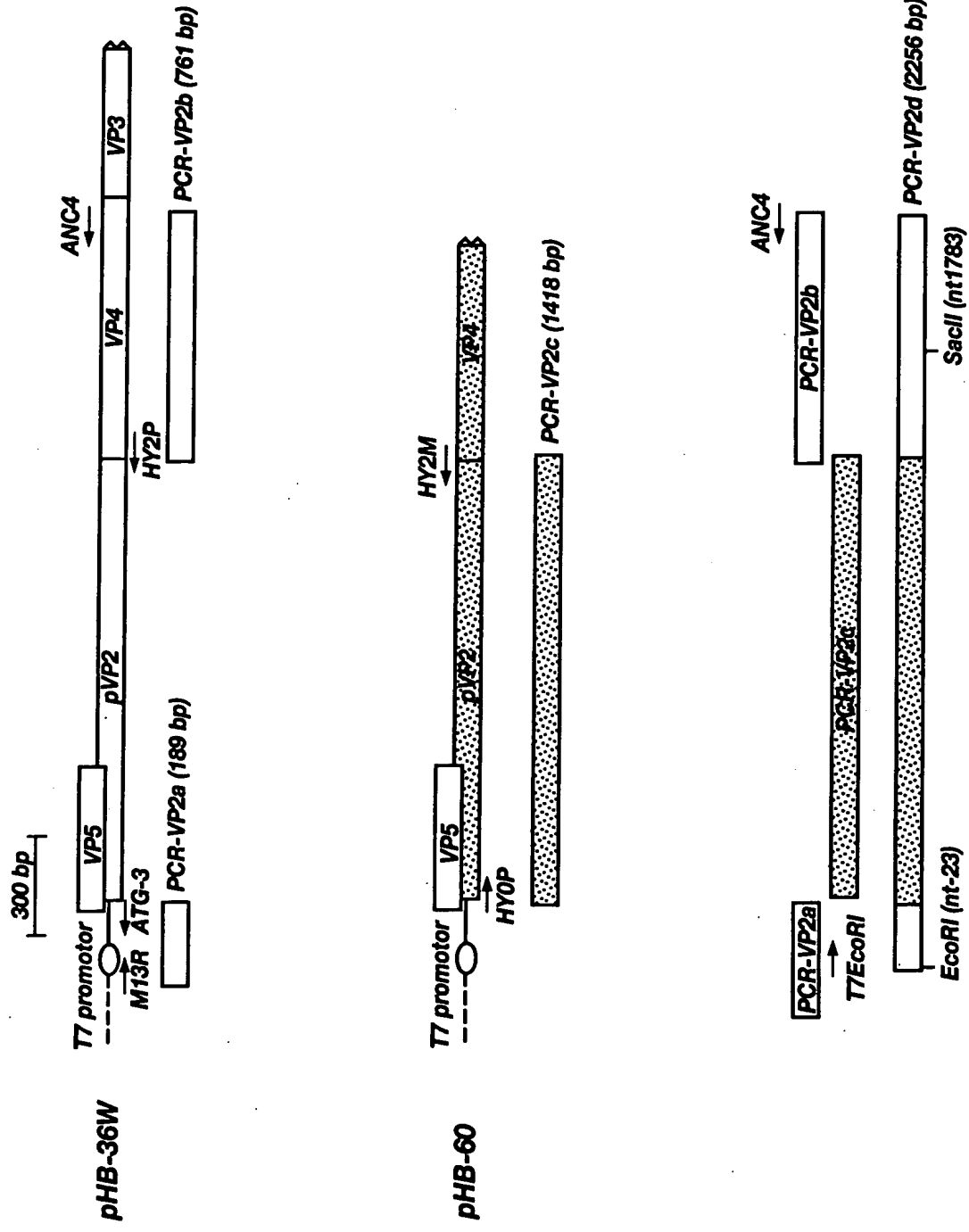


FIG. 21

FIG. 22

